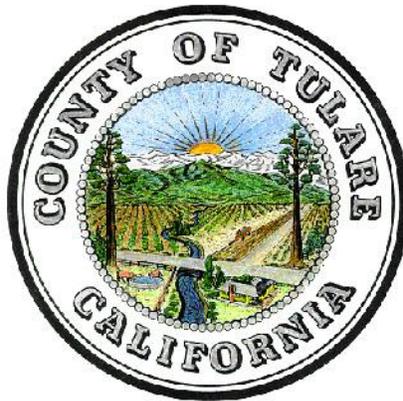


DRAFT ENVIRONMENTAL IMPACT REPORT

FOR THE

**ANIMAL CONFINEMENT FACILITIES
PLAN, AND DAIRY AND FEEDLOT CLIMATE ACTION PLAN**

SCH # 2011111078



**Tulare County Resource Management Agency
5961 South Mooney Boulevard
Visalia, California 93277-9394**

January 2016

**With Technical Assistance By:
Quad Knopf, Inc.
901 East Main Street
Visalia, California 93292**

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GLOSSARY

List of Acronyms

$\mu\text{g}/\text{m}^3$	Micrograms Per Cubic Meter
AADT	Annual Average Daily Traffic
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
AC	Asphaltic Concrete
ACE	United States Army Corps of Engineers
ACFP	Animal Confinement Facilities Plan
ADT	Average Daily Traffic
AE	Exclusive Agriculture
AERMOD	Computer Modeling Program
af/ac	Acre-feet per Acre
af/yr	Acre-feet per Year
APN	Assessor's Parcel Number
ARPA	Archaeological Resources Protection Act
ATC	Authority to Construct Permit from San Joaquin Valley Air Pollution Control District
AU	Animal Units
BACM	Best Available Control Measures
BACT	Best Available Control Technology
BLM	Bureau of Land Management
BMP	Best Management Practices
Ca	Calcium
CAA	Federal Clean Air Act
CAAA	Clean Air Act Amendment
CAAQS	California Ambient Air Quality Standards
CACUAB	County Adopted City Urban Area Boundary
CACUDB	County Adopted City Urban Development Boundary
CAFO	Confined Animal Facilities Operations
CalEPA	California Environmental Protection Agency
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CALUP	Comprehensive Airport Land Use Plan
CARB	California Air Resources Board
CASHL	California State Historic Landmark
CCAA	California Clean Air Act
CCAP	Climate Change Action Plan
CCAR	California Climate Action Registry
CCOS	Central California Ozone Study
CCR	California Code of Regulations
CDA	Community Development Agency

CDFA	California Department of Food and Agriculture
CDFFP/TCFD	California Department of Forestry and Fire Protection/Tulare County Fire Department
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cf	Cubic Feet
CFR	Code of Federal Regulations
CH ₄	Methane
CHP	California Highway Patrol
CIWMB	California Integrated Waste Management Board
Cl ₂	Chloride
CMP	Conservation Management Practices
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ e	CO ₂ equivalents
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSA	County Service Area
CSC	Species of Special Concern
CTI	California Toxics Inventory
CTS	Candidate Threatened Species
CUP	Conditional Use Permit
CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dB	Decibel
dBA	A-Weighted Decibel
DEIR	Draft Environmental Impact Report
DFG	Department of Fish and Game
DHS	California Department of Health Services
DNL	Day-Night Average Sound Level
DOF	California Department of Finance
DOT	Department of Transportation
DPH	California Department of Public Health
DPM	Diesel Particulate Matter
DTSC	Department of Toxic Substance Control
DU	Dwelling Unit
DWP	Drinking Water Program
DWR	California Department of Water Resources
EHD	Environmental Health Division

EIR	Environmental Impact Report
ESA	Endangered Species Act
ESD	Equivalent Single Family Dwelling
ET	Evapotranspiration
FAA	Federal Aviation Administration
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
FMMP	Farmland Mapping and Monitoring Program
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GCC	Global Climate Change
GHG	Greenhouse Gas
GIS	Geographic Information System
GPA	General Plan Amendments
gpm	Gallons per Minute
GWP	Global Warming Potential
H ₂ S	Hydrogen Sulfide
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HFCs	Hydrofluorocarbons
HHSA	Health and Human Services Agency
HR	Hydrologic Region
HRA	Health Risk Assessment
ID	Irrigation Districts
ILCR	Individual Lifetime Cancer Risk
IPCC	Intergovernmental Panel on Climate change
IRWMP	Integrated Regional Water Management Plan
kWh	Kilowatt-hours
LAFCo	Local Agency Formation Commission
LCFS	Low Carbon Fuel Standard
Ldn	Day-Night Average Sound Level
Leq	Equivalent Sound Level
LOS	Level of Service
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Levels
Mg	Magnesium
mgd	Million Gallons per Day
mg/L	Milligrams per Liter
MMcf	Million Cubic Feet
MMRP	Mitigation Monitoring and Reporting Program
MOU	Memorandum of Understanding
N ₂ O	Nitrous Oxide
Na	Sodium
NAAQS	National Ambient Air Quality Standards

NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NH ₃	Ammonia
NHPA	National Historic Preservation Act
NO ₃	Nitrate
NOP	Notice of Preparation
NO _x	Nitrogen Oxides
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources and Conservation Service
NRHP	National Register of Historic Places
NSR	New Source Review
NWP	Nationwide Permit
O ₃	Ozone
OPR	Governor's Office of Planning and Research
OSHA	Occupational Health and Safety Administration
Pb	Lead
PCC	Portland Cement Concrete
PM ₁₀	Particulate Matter
PM _{2.5}	Fine Particulate Matter
PPM	Parts per Million
PRC	Public Resources Code
PTO	Permit to Operate
RFS	Renewable Fuel Standard
RMA	Resource Management Agency
ROG	Reactive Organic Gases
RTP	Regional Transportation Plan
RVLP	Rural Valley Lands Plan
RWD	Report of Waste Discharge
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCE	Southern California Edison
SDWA	Safe Drinking Water Act
SEL	Sound Exposure Level
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMARA	Surface Mining and Reclamation Act
SO ₂	Sulfur Dioxide
SO ₄	Sulfate
SOI	Sphere of Influence
SR	State Route
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants

TCAG	Tulare County Association of Governments
TDS	Total Dissolved Solids
TOGs	Total Organic Gases
UAB	Urban Area Boundary
UDB	Urban Development Boundary
USEPA	United State Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compounds

Definitions

ACFP: The Animal Confinement Facilities Plan of the Environmental Resources Management Element of the Tulare County General Plan.

Ambient Air: Air occurring at a particular time and place outside of structures. Often used interchangeably with outdoor air.

Animal Confinement Facility: Where used, the term “animal confinement facility” includes animal barns, corrals, or pens; feed (excluding hay barns) and manure storage and handling areas, and wastewater lagoons/sumps. When measuring setbacks and distances to animal facilities, measurements shall be taken from the most proximate part of the above-described facilities. Areas used for crop production or not otherwise utilized in the production of milk shall not be included for purposes of determining said setbacks and distances.

Animal Unit: A common animal denominator, based on feed consumption, where one mature cow (1,400 pounds) represents one animal unit, as defined by the Regional Water Quality Control Board. An “Animal Unit” is the feed equivalent of one milk cow, as follows:

Classification	Animal Units per Head
Dairy cows in milk and bulls	1.00
Dry cows and heifers more than two years of age	0.75
Heifers one year to two years (beef or dairy)	0.70
Heifers three months to one year (beef or dairy)	0.40
Calves to three months of age	0.17
Beef cows in milk and feedlot steers	0.75

Animal units for any other animals on site are calculated according to Regional Water Quality Control Board requirements.

Area Source: Term used in air quality analysis; also known as “area-wide” sources. These include multiple stationary emission sources.

Attainment: Achieving and maintaining air quality standards (both state and federal) for a given standard.

CEQA (California Environmental Quality Act): Public Resources Code, Division 13, from Section 21000 to 21178.

CEQA Guidelines: California Code of Regulations, Title 14, Chapter 3, from Section 15000 to 15387.

Criteria Air Pollutant: An air pollutant for which acceptable levels of exposure can be determined and for which a federal or state Ambient Air Quality Standard has been set. Examples include: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM₁₀.

Crop Acreage: Irrigable portion of total/gross dairy parcel(s), including wastewater conveyance ditches, that is to be used for wastewater discharge, which exclude buildings, corrals and/or pens, feed and/or manure storage areas, lagoons/sumps, canals, waterways, and public road rights-of-way.

Dairy: The general term for an agricultural enterprise principally engaged in the production of milk.

Dairy Facility: That portion of a dairy which includes the corrals, barns, feed storage, milk barn, lagoons and other manure handling facilities, but not including the associated farmland.

Dairy Site: All of the land used for a dairy including the Dairy Facility and associated farmland.

Dry Cows: Mature cows not being milked.

Emissions Inventory: An estimate of the quantity of pollutants emitted into the atmosphere over a specific period such as a day or a year. Considerations defining and describing the inventory include type and location of sources, the processes involved, and the level of activity.

Emission Standard: The maximum amount of a pollutant that is permitted to be discharged from a polluting source.

Freestall Barns: Roofed, no siding, barns housing milk cows.

Head: Dairy animal: calf, heifer, milk cow, dry cow.

Indirect Source: Facilities, buildings, structures, properties, and/or roads which, through construction and operation indirectly contribute to air pollution. This includes projects and facilities that attract or generate mobile sources activity (autos and trucks) that result in the emissions of any regulated pollutant.

Mature Cows: Milk cows or dry cows.

NDPES Permit: A National Pollutant Discharge Elimination System Permit issued under Section 402 of the federal Clean Water Act.

Other Bovine Facilities: Feedlots, calf ranches (dairy support animals).

Ozone Precursors: Compounds such as hydrocarbons and oxides of nitrogen, occurring either naturally or as a result of human activities, which contribute to the formation of ozone, the principal component of smog.

Point Source: Under the federal Clean Water Act (CWA), “point source” includes any discernible, confined and discrete activity or conveyance and specifically includes a “concentrated animal feeding operation” (CAFO).

ROG: Reactive Organic Gases, also referred to as VOG’s or Volatile Organic Gases, precursors for the formation of ozone (smog).

Runoff Control System: A combination of management practices used together to prevent water pollution from dairy or feedlot runoff. Practices may include diversion of runoff from the yard, roof runoff systems, yard shaping, settling basins, and filter strips or buffer areas.

Soil Permeability: The quality that enables the soil to transmit water. Slowly permeable soils have fine-textured materials, like clays, which permit only slow water movement. Moderately or highly permeable soils have coarse-textured materials, like sands, that permit rapid water movement.

100 Year Storm Event: Precipitation that falls during a large storm event that statistically occurs approximately once in 100 years.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Introduction

This document is a Draft Program Environmental Impact Report (*EIR*) evaluating the environmental effects of the adoption and implementation of the Tulare County Animal Confinement Facilities Plan (*ACFP*) and the Dairy and Feedlot Climate Action Plan (“proposed Program,” see Appendices A and B). Tulare County is the Lead Agency responsible for the adoption and implementation of the proposed Program, pursuant to the California Environmental Quality Act (*CEQA*, Pub. Res. Code § 21000 *et seq.*) and the *CEQA* Guidelines (14 Cal. Code Regs. §15000 *et seq.*).

The County has prepared a Notice of Preparation and an Initial Study (Appendix C) and circulated it for comments, and has determined that the proposed Program may have a significant effect on the environment and that, as a result, an *EIR* is required. The *EIR* analyzes potentially significant environmental effects, and identifies feasible mitigation measures and alternatives to reduce significant environmental impacts.

Section 15123 of the *CEQA* Guidelines requires that an *EIR* contain a brief summary of the proposed project and its consequences. This Executive Summary is required to identify the following:

1. Each significant impact with proposed mitigation measures and alternatives that would reduce or avoid that effect;
2. Areas of controversy known to the Lead Agency including issues raised by agencies and the public; and
3. Issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects.

Procedures

Tulare County has determined that a Program *EIR* should be prepared for the existing dairies and other bovine facilities together with projected new and expanded dairies and other bovine facilities that are expected to be developed by 2023. A Program *EIR* is described in Section 15168 of the State *CEQA* Guidelines as one that is prepared for a series of actions that can be characterized as one large project, including activities carried out under the same statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

Program Location

The proposed Program area is comprised of the western approximate one-third of Tulare County which contains almost all of the County’s confined animal facilities (see Figure 2-2). Tulare County lies in the southern half of and on the east side of the San Joaquin Valley, the great central valley of California, which is bounded on three sides by mountains - the Coast Range to

the west and the Sierra Nevadas to the east and south (see Figure 2-1). The County itself covers approximately 4,863 square miles and encompasses 3,112,320 acres.

Program Objectives

The proposed Program is the update of the County of Tulare's Animal Confinement Facilities Plan, Phase I. It governs dairies and other bovine facilities. The general Program objectives are as follows:

1. To continue the regulation of the County's dairy industry to protect and enhance the County's resources, assure public health and safety, and minimize environmental impacts;
2. To identify and document those existing bovine facilities which are operating under valid *RWQCB* and *SJVAPCD* approvals, and to specify procedures to achieve compliance by those existing bovine facilities that are not yet in compliance;
3. To modify, as feasible, the scope of County regulatory responsibilities to avoid overlap and duplication with the water quality and air quality oversight provided by the *RWQCB* and the *SJVAPCD*;
4. To update and simplify the permitting processes for bovine facility expansions and the establishment of new bovine facilities consistent with the *ACFP*; and
5. To develop a Dairy and Feedlot Climate Action Plan that analyzes cumulative greenhouse gas (*GHG*) impacts.

Proposed Program Description

The proposed Program consists of the Animal Confinement Facilities Plan and the Dairy and Feedlot Climate Action Plan (Dairy *CAP*); it would revise the way dairies are regulated by the County of Tulare. Under the existing *ACFP* adopted in 2000, expansions of existing dairies and bovine facilities, and establishment of new dairies and bovine facilities, must be approved through the special use permit process.

Some of the County's 302 dairies and 28 other confined bovine facilities (feed lots and calf ranches) were approved under existing *ACFP* or predecessor regulations. Other, grandfathered, facilities were established prior to such regulations. The proposed amended *ACFP* provides for permitting of all existing and proposed facilities or their expansion.

Under the proposed amended *ACFP*, the expansions of existing dairies and bovine facilities or new dairies which fully comply with the requirements of the *ACFP* and with mitigation measures adopted following certification of this *EIR* may be eligible for a site plan review process for permitting approval; such approval would be preceded by the submittal of technical reports and environmental evaluation followed by written findings that the expansion or new facility is within the scope of the Program *EIR*. All other expansions, as well as the establishment of new dairies and other bovine facilities (calf ranches and feedlots), would be approved through a special use permit process with additional *CEQA* evaluation.

The Dairy and Feedlot Climate Action Plan (Dairy *CAP* provides a procedure for *CEQA* climate change evaluations. The *CAP* includes inventories and projections of *GHG* emissions, an approach for determining whether an individual dairy/feedlot's contribution is cumulatively considerable, accounts for existing and anticipated future dairy/feedlot emissions that are consistent with the Dairy *CAP* and its proposed *GHG* reduction measures, and establishes a monitoring plan for tracking mitigation measure performance.

Chapter Two provides a full Program description.

Areas of Controversy

Based on comments received on the Notice of Preparation, areas of controversy include impacts of the proposed Program, and mitigation measures, for the following resources:

- Aesthetics;
- Agricultural Land / Forest Resources;
- Air Quality;
- Biological Resources;
- Cultural Resources;
- Geology/Soils;
- Greenhouse Gas Emissions;
- Hazards and Hazardous Materials;
- Hydrology/Water Quality;
- Land Use/Population/Housing;
- Noise;
- Public and Utility Services;
- Recreation;
- Transportation/Traffic; and
- Cumulative Impacts.

Issues to be Resolved

Issues to be resolved include the choice among alternatives evaluated in the Draft *EIR*, and the selection of Draft *EIR* mitigation measures for adoption.

Alternatives to the Proposed Program

Chapter Four of this *EIR* provides a description of the alternatives considered and an analysis of the environmental impacts of the alternatives. This *EIR* includes an evaluation of the following alternatives:

1. No Program (No *ACFP* Update)

2. CEQA evaluation. Thirty-three Percent Reduced Herd Size and Support Stock

- a. Future growth of the dairy industry would occur under the Thirty-three Percent Reduced Herd Size Alternative, but at a growth rate of 1% per year over ten years rather than 1 ½% per year.

These alternatives are described and compared with the proposed Program. Chapter Four concludes with an analysis of the comparative environmental merits of the alternatives, as required by *CEQA*, with the Thirty-three Percent Alternative identified as environmentally superior although not fully meeting basic Program objectives.

Unavoidable Significant Environmental Effects

▪ Air Quality:

- Impact #3.3.1 – Conflict With or Obstruct Implementation of any Applicable Air Quality Plan
- Impact #3.3.2 – Cause a Violation of any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation
- Impact #3.3.3 – 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

▪ Biological Resources:

- Impact #3.4.1 – Substantial Adverse Effect on Special-status Species
- Impact #3.4.2 – Substantial Adverse Effect on any Riparian Habitat or Other Sensitive Community
- Impact #3.4.3 – Substantial Adverse Effect on Wetlands and Jurisdictional Waters
- Impact #3.4.4 – Substantially Interfere with the Movement of Fish or Wildlife Corridors, or Disturb Wildlife Nursery Sites

▪ Greenhouse Gases:

- Impact #3.7.1 – Increase in *GHG* Emissions Compared to Existing Conditions
- Impact #3.7.2 – Inconsistent with Tulare County’s General Plan Climate Action Plan or *TCAG’s RTP/SCS*
- Impact #3.7.3 – Inconsistent with the State’s Ability to Achieve *AB 32*, *EO B-30-15*, and *S-3-05* Emissions Reductions Targets

- **Hydrology/Water Quality:**
 - Impact #3.9.1 – Violation of Water Quality Standard or Waste Discharge Requirements
 - Impact #3.9.2 – Depletion of Groundwater Supplies or Interference with Groundwater Recharge

- **Noise:**
 - Impact #3.11.2 – Operational Noise

- **Transportation/Traffic:**
 - Impact #3.14.6 – Accelerated Road Deterioration

In addition, cumulative impacts for several resource categories remain cumulatively considerable post-mitigation.

Summary of Impacts and Mitigation Measures

Section 15123(b)(1) of the *CEQA Guidelines* provides that this summary shall identify each significant effect with proposed mitigation measures that would reduce or avoid that effect. This information is summarized in Table ES-1, “Summary of Significant Impacts, Proposed Mitigation Measures and Level of Significance after Mitigation.” In addition, the Draft *EIR* has analyzed cumulative impacts and found that the proposed Program would have cumulatively considerable contributions to the following cumulative impacts: aesthetics, air quality, biological resources, cultural resources, greenhouse gas emissions, hydrology/water quality, noise and transportation/traffic. The reader should note that Table ES-1 contains only a summary for quick reference of identified impacts and mitigation measures. Chapter Three should be consulted for the full text of impacts and mitigation measures.

**Table ES-1
Summary of Significant Impacts, Proposed Mitigation Measures, and Level of Significance After Mitigation**

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
AESTHETICS						
3.1.1	Scenic Vistas and Visual Character	3.1-3		None are required	Less than Significant	
3.1.2	Scenic Resources	3.1-5		None are required	Less than Significant	
3.1.3	Light and Glare	3.1-5	3.1.3	Outdoor lighting at expanded or new dairies and other bovine facilities shall be designed and installed to direct all illumination downward and onsite.	Significant	Less than Significant
AGRICULTURAL LAND/FOREST RESOURCES						
3.2.1	Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance	3.2-4		None are required	Less than Significant	
3.2.2	Zoning Conflicts and Williamson Act Impacts	3.2-4		None are required	Less than Significant	
3.2.3	Impact on Timberland Production and Forest Lands	3.2-5		None are required	Less than Significant	
3.2.4	Conversion of Farmland or Forest Land	3.2-5		None are required	Less than Significant	

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
AIR QUALITY						
3.3.1	Conflict With or Obstruct Implementation of any Applicable Air Quality Plan	3.3-26	3.3.1	The County will require, as a component of the <i>ACFP</i> Annual Compliance Report, owners to submit evidence of full compliance with all pertinent <i>SJVAPCD</i> permits and regulations. If there is evidence of non-compliance, the County will notify the <i>SJVAPCD</i> and require the owner to submit a Corrective Action Plan.	Significant	Significant
3.3.2	Cause a Violation of any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	3.3-27	3.3.2	The County will require, as a component of the <i>ACFP</i> Annual Compliance Report, owners to submit evidence of full compliance with all pertinent <i>SJVAPCD</i> permits and regulations. If there is evidence of non-compliance, the County will notify the <i>SJVAPCD</i> and require the owner to submit a Corrective Action Plan.	Significant	Significant
3.3.3	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	3.3-32	3.3.3	The County will require, as a component of the <i>ACFP</i> Annual Compliance Report, owners to submit evidence of full compliance with all pertinent <i>SJVAPCD</i> permits and regulations. If there is evidence of non-compliance, the County will notify the <i>SJVAPCD</i> and require the owner to submit a Corrective Action Plan.	Significant	Significant
3.3.4	Expose Sensitive Receptors to Substantial Pollutant Concentrations	3.3-33		None are required	Less than Significant	

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
3.3.5	Exposure of a Substantial Number of People to Sources of Objectionable Odors	3.3-34		None are required	Less than Significant	
BIOLOGICAL RESOURCES						
3.4.1	Substantial Adverse Effect on Special-Status Species	3.4-19	3.4.1	Each new dairy/other bovine facility development or expansion shall be evaluated by a wildlife biologist. If special status species are potentially present and could be affected by project activities, the County will require assessments of potential habitat for special-status species on proposed projects sites. Special status wildlife species surveys shall be conducted by a qualified biologist according to appropriate <i>USFWS</i> or <i>DFW</i> protocol and special status plant surveys shall be conducted according to the latest version of the California Native Plant Society and <i>DFW</i> protocols for each special status species that potentially occurs. If special status species are determined to be present and subject to impacts from project construction or operation, the County will require avoidance or substantial reduction of impacts to that habitat through feasible alternatives or mitigation measures, including the establishment of buffer areas and compensatory mitigation where unavoidable losses of occupied habitat would occur. Mitigation measures will be developed consistent with applicable state and federal requirements. For those species for which published mitigation guidance exists, mitigation measures will follow the guidance provided in these publications or provide a similar level of protection. If previous published guidance does not exist, mitigation will be developed in consultation with the appropriate agencies (<i>USFWS</i> or <i>DFW</i>). The County	Significant	Significant

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
				<p>will require project applicants to obtain any required incidental take permits prior to project implementation.</p> <p>Mitigation approaches for specific special status species include the following:</p> <ul style="list-style-type: none"> ▪ Special status plants: In areas where special status plant species potentially occur, follow DFW survey and evaluation guidelines. Avoid special plant species where possible by delineation and observing at least a 50-foot no disturbance buffer. ▪ California tiger salamander: In areas with seasonal wetlands suitable for breeding habitat for the California tiger salamander conduct survey according to the <i>USFWS</i> 2003 protocol or assume presence and either avoid take or apply for <i>ITP</i>. ▪ Blunt-nosed leopard lizard: Conduct protocol level-surveys in suitable habitat (grassland and shrub scrub habitat with required habitat elements such as small mammal borrows), and avoid take since species is fully protected. ▪ Swainson’s hawk and nesting raptors: Conduct Swainson’s hawk protocol surveys and either avoid take or apply for <i>ITP</i>. Mitigate consistent with <i>DFW</i> recommendations. ▪ Burrowing owl: Conduct surveys for the western burrowing owl if project occurs within suitable burrowing owl habitat (e.g., fallowed agricultural lands, native lands, undisturbed 		

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
				lands, levees of canal banks) or is situated within 250 feet of burrowing owl habitat. If ground disturbance will occur within 250 feet of a burrowing owl or burrowing owl burrow avoid or mitigate consistent with <i>CDFW</i> guidelines.		
				<ul style="list-style-type: none"> ▪ San Joaquin antelope squirrel, Tipton kangaroo rat, and San Joaquin kit fox: Conduct protocol-level surveys consistent with most recent survey protocols and either avoid take or apply for <i>ITP</i>. Mitigate consistent with <i>DFW</i> recommendations. 		
3.4.2	Substantial Adverse Effect on any Riparian Habitat or Other Sensitive Community	3.4-21	3.4.2	<p>Applicants for expanded or new dairy and other facilities will retain a qualified biologist to document whether riparian habitats or other sensitive natural communities may occur on their project site and could be affected by project activities as part of their application, or whether offsite habitat areas could be significantly affected. If onsite sensitive natural communities are potentially present and could be affected by project activities or offsite habitat areas could be significantly affected, the County will require assessments by a qualified biologist, and avoidance or substantial reduction of impacts to sensitive natural communities through feasible alternatives or mitigation measures, including the establishment of appropriate buffer areas and compensatory mitigation where unavoidable losses would occur.</p>	Significant	Significant
				<p>Significant impacts to any riparian habitat or sensitive natural community impact will be mitigated consistent with <i>USFWS</i> or <i>DFW</i> recommendations. <i>DFW</i> recommends a 200-foot no disturbance buffer for riparian vegetation delineated from the water body's high water mark.</p>		

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
3.4.3	Substantial Adverse Effect on Wetlands and Jurisdictional Waters	3.4-22	3.4.3	<p>Applicants for expanded or new dairy and other facilities will retain a qualified biologist or wetlands specialist to evaluate and document whether wetlands or other jurisdictional waters may occur on their project site and could be affected by project activities as part of their application. If they are potentially present and could be affected by project activities, the County will require formal wetlands delineations and assessments by a qualified wetlands specialist, and avoidance or substantial reduction of impacts to wetlands and other jurisdictional waters through feasible alternatives or mitigation measures, including appropriate buffer areas and compensatory mitigation where unavoidable losses would occur. Impacts to wetlands or jurisdictional waters will be mitigated in accord with <i>USFWS</i>, <i>DFW</i> and/or <i>ACOE</i> and <i>CVRWQCB</i> requirements. <i>DFW</i> recommends that wetlands impacts be mitigated on a minimum of an acre-for-acre basis, and that no-disturbance buffers be established 200 feet from the high water mark of jurisdictional waters and 250 feet from the high water mark of vernal pools and swales.</p> <p>The County will require project applicants to obtain and submit copies of any required permits (e.g., Section 404, Waste Discharge Requirements, and streambed alteration agreements) prior to project implementation.</p>	Significant	Significant
3.4.4	Substantially Interfere with the Movement of Fish or Wildlife or Impede Wildlife Corridors, or	3.4-23	3.4.4	<p>Applicants for expanded or new dairy and other facilities will retain a qualified wildlife biologist to evaluate and document whether fish or wildlife movement, corridors or nurseries could be affected as part of their application. If they could be affected, the County will require assessments by a qualified</p>	Significant	Significant

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
	Disturb Wildlife Nursery Sites			biologist, and avoidance or substantial reduction of impacts through feasible alternatives or mitigation measures. These include providing buffer zones adjacent to identified wildlife corridors, using native plant landscaping within a least 200 feet identified wildlife corridors, using shielded or direct lighting in areas near identified wildlife corridors, and installing physical barriers such as fencing to prevent animal and human entry into identified wildlife corridors.		
3.4.5	Conflict with any Local Policies or Ordinances Protecting Biological Resources	3.4-24		None are required	Less than Significant	
3.4.6	Habitat Conservation Plan or Other Plan Conflicts	3.4-24		None are required	Less than Significant	
CULTURAL RESOURCES						
3.5.1	Disturbance of Historical or Archeological Resources	3.5-11	3.5.1	Applicants for expanded or new dairy and other bovine facilities will retain a qualified archeologist to conduct a cultural resource records search for each new or expanded dairy facilities site. Based on that records search, the applicant will retain a qualified archeologist to prepare an inventory report and evaluation of significance if the search discloses the likelihood of significant historical or archeological resources, and the County will consult with the Native American Heritage Commission, and, for projects require additional CEQA review, with Native American tribes as required by AB 52. The County will require the applicant to implement	Significant	Less than Significant

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
				<p>appropriate mitigation measures as consistent with <i>CEQA</i> Guidelines Section 15126.4(b), including compliance with the Secretary of Interior’s standards for historic buildings, and for archeological resources preservation in place if feasible or data recovery if preservation in place is not feasible.</p> <p>If there is no recorded evidence of historical or archaeological sites on the project site, the possibility remains that resources may exist. If, in the course of project construction any archaeological or historical resources are uncovered, discovered, or otherwise detected or observed, the applicant will immediately cease activities within 50 feet of the find area shall. The applicant will contact a qualified archaeologist to evaluate the find and advise the County of Tulare of the resource’s significance. If the County’s Environmental Assessment Officer determines that the resource is significant, the County will require the applicant to implement appropriate mitigation measures as defined by <i>CEQA</i> Guidelines Section 15126.4(b).</p>		
3.5.2	Destruction of Paleontological Resources or Geologic Feature	3.5-11	3.5.2	<p>Even if there is no record evidence of paleontological sites on new or expanding dairy and other bovine facility sites, the possibility remains that resources exist. If, in the course of project construction including construction of Dairy <i>CAP GHG</i> reduction measures with construction impacts, any paleontological resources are uncovered, discovered, or otherwise detected or observed, the applicant will immediately cease activities within 50 feet of the find area. The applicant will contact a qualified paleontologist to evaluate the find and advise the County of Tulare of the resource’s significance. If the County’s Environmental Assessment Officer</p>	Significant	Less than Significant

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
				determines the resource is significant, the County will require the applicant to implement appropriate mitigation measures such as excavation and transfer to a museum will be required prior to any resumption of work in the affected area of the project.		
3.5.3	Disturbance of Human Remains	3.5-13	3.5.3	The County will not allow construction of dairies or bovine facilities on areas identified or identifiable as former cemeteries or burial grounds. If, in the course of future project construction or operation, any skeletal remains are uncovered, discovered, or otherwise detected or observed, the applicant will immediately cease activities in the affected area and the County will require compliance with Health & Safety Code Section 7050.5 and Public Resources Code Section 5097.98. The applicant will consult a qualified archaeologist, the County's Environmental Assessment Officer, the County Coroner and local Native American organizations, and the County will require appropriate measures that may include avoidance of disturbance at the burial site or dignified reburial of the remains.	Significant	Less than Significant
GEOLOGY, SOILS AND MINERAL RESOURCES						
3.6.1	Seismic Effects	3.6-8		None are required	Less than Significant	
3.6.2	Landslides, Geologic Unit/Soil Instability	3.6-9		None are required	Less than Significant	
3.6.3	Soil Erosion, Topsoil Loss	3.6-9		None are required	Less than Significant	
3.6.4	Expansive Soil Hazards	3.6-10		None are required	Less than Significant	

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
3.6.5	Mineral Resources	3.6-10		None are required	Less than Significant	
GREENHOUSE GAS/ENERGY ANALYSIS						
3.7.1	Increase in <i>GHG</i> Emissions Compared to Existing Conditions	3.7-12	3.7.1	The Draft Dairy <i>CAP</i> identifies all potentially feasible <i>GHG</i> reduction strategies for dairies and other bovine facilities. Because of the site-specific variations in individual facilities, some emissions reductions measures are likely to be feasible at most facilities (Category A), but some are not (Category B). Feasible project-specific <i>GHG</i> reduction measures will be adopted as <i>CEQA</i> mitigation measures when the County approves expanded or new facilities under the <i>ACFP</i> ; project-specific <i>GHG</i> reductions achieved by project-specific mitigation measures will be quantified at that time. The County will require, as a component of the <i>ACFP</i> Annual Compliance Report, owners to submit evidence that adopted <i>GHG</i> mitigation measures are being implemented. If there is evidence of non-compliance, the County will require the owner to submit a Corrective Action Plan.	Significant	Significant
3.7.2	Inconsistent with Tulare County's General Plan Climate Action Plan or <i>TCAG's RTP/SCS</i>	3.7-16	3.7.2	See mitigation measure for Impact #3.7.1.	Significant	Significant
3.7.3	Inconsistent with the State's Ability to Achieve <i>AB 32, EO B-30-15, and S-3-05</i> Emissions Reductions Targets	3.7-17	3.7.3	See mitigation measure for Impact #3.7.1.	Significant	Significant

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
3.7.4	Use Energy in an Inefficient, Wasteful or Unnecessary Manner	3.7-18		None are required	Less than Significant	
3.7.5	Increased Reliance on Fossil Fuels and Decreased Reliance on Renewable Energy Sources	3.7-18		None are required	Less than Significant	
HAZARDS AND HAZARDOUS MATERIALS						
3.8.1	Operational Hazards from Routine Use or Upsets/Accidents	3.8-8		None are required	Less than Significant	
3.8.2	Hazardous Emissions, Materials, and Waste Impacts on Schools	3.8-9		None are required	Less than Significant	
3.8.3	Hazardous Materials Sites	3.8-9		None are required	No Impacts	
3.8.4	Airport Hazards	3.8-10		None are required	Less than Significant	
3.8.5	Emergency Response/ Evacuation Plans and Wildland Fires	3.8-11		None are required	Less than Significant	
HYDROLOGY/WATER QUALITY						
3.9.1	Violation of Water Quality Standards or Waste Discharge	3.9-36	3.9.1	The County will require, as a component of the <i>ACFP</i> Annual Compliance Report, owners to submit evidence of full compliance with all pertinent	Significant	Significant

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
	Requirements; Otherwise Substantially Degrade Water Quality			<i>CVRWQCB</i> regulations and Waste Discharge Requirements. If there is evidence of non-compliance, the County will notify the <i>CVRWQCB</i> and require the owner to submit a Corrective Action Plan.		
3.9.2	Depletion of Groundwater Supplies or Interference with Groundwater Recharge	3.9-38		<p>Applicants for expanded and new dairy and other bovine facilities may be required to prepare a project-specific water supply analysis to evaluate the local surface and groundwater conditions relevant to the proposed project location and whether adequate water supplies are available at that specific location. From this site-specific assessment, the County will understand:</p> <ul style="list-style-type: none"> ▪ Specific water management and water use projections associated with the proposed <i>ACFP</i> operations, including liquid manure management, cropping plans, and facility management; ▪ Planned water sources to meet projected water needs; ▪ Local groundwater conditions and sustainable management efforts, if any, as part of the overlying Groundwater Sustainability Agency with jurisdiction; and ▪ Local surface water reliability and availability conditions in relation to projected water needs. 	Significant	Significant
3.9.3	Drainage Pattern Alterations Causing Erosion or Siltation	3.9-39		None are required	Less than Significant	

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
3.9.4	Drainage Pattern Alterations or Runoff Causing Flooding or Pollution	3.9-39		None are required	Less than Significant	
3.9.5	Flood Hazards and Dam or Levee Failure	3.9-39		None are required	Less than Significant	
3.9.6	Seiche, Tsunami, Mudflow Impacts	3.9-40		None are required	No Impacts	
LAND USE/POPULATION/HOUSING						
3.10.1	Division of an Established Community	3.10-4		None are required	No Impacts	
3.10.2	Existing Plans and Policies Compliance	3.10-5		None are required	Less than Significant	
3.10.3	Habitat Conservation Plan Conflicts	3.10-5		None are required	Less than Significant	
3.10.4	Population and Housing	3.10-5		None are required	Less than Significant	
NOISE						
3.11.1	Construction Noise, Groundborne Vibration	3.11-6		None are required	Less than Significant	

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
3.11.2	Operational Noise	3.11-7	3.11.2	There are no additional feasible traffic noise mitigation measures other than those identified in the General Plan <i>EIR</i> .	Significant	Significant
3.11.3	Exposure to Airport Noise	3.11-9		None are required	Less than Significant	
PUBLIC AND UTILITY SERVICES						
3.12.1	Public Services Facilities	3.12-5		None are required	Less than Significant	
3.12.2	Exceedance of Regional Water Quality Control Board Wastewater Requirements; New Wastewater Facilities	3.12-6		Please see Impact #3.9.1.	Please see Impact #3.9.1.	Please see Impact #3.9.1.
3.12.3	Storm Water Drainage	3.12-6		Please see Impacts # 3.9.3 and 3.9.4.	Please see Impacts # 3.9.3 and 3.9.4.	Please see Impacts # 3.9.3 and 3.9.4.
3.12.4	Sufficient Water Supplies; New Water Treatment Facilities	3.12-6		Please see Impact #3.9.2.	Please see Impact #3.9.2.	Please see Impact #3.9.2.
3.12.5	Wastewater Treatment Provider Capacity	3.12-6		None are required	No Impacts	
3.12.6	Solid Waste	3.12-6		None are required	Less than Significant	

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
RECREATION						
3.13.1	Recreational Facilities	3.13-2		None are required.	Less than Significant	
TRANSPORTATION / TRAFFIC						
3.14.1	Performance of Circulation System	3.14.8		None are required.	Less than Significant	
3.14.2	Change Air Traffic Patterns	3.14-10		None are required.	No Impacts	
3.14.3	Increase Road Hazards	3.14-10		None are required.	Less than Significant	
3.14.4	Emergency Access Interference	3.14-11		None are required.	No Impact	
3.14.5	Other Transportation Mode Conflict	3.14-11		None are required	Less than Significant	
3.14.6	Accelerated Road Deterioration	3.14-11	3.14.6A	The County, through <i>RMA</i> , is committed in good faith through its Pavement Management System and the proposed Farm to Market Road Program to expend funds to insure that road deterioration impacts are mitigated to the extent feasible. In doing so, the County will conduct in good faith an annual review of roads that are affected by dairy traffic. Based on this annual review, the County will prioritize the expenditure of funds to mitigate road deterioration conditions to the extent feasible.	Significant	Significant
			3.14.6B	In addition to the above, the County will require of each new or expanded dairy or bovine facility a pavement mitigation fee for roads servicing the dairy or facility. Such fee shall be based upon projected proportional truck loading impacts and the costs to		

Impact No.	Impact	EIR Page #	Mitigation #	Mitigation Measures	Level of Significance Before Mitigation	Level of Significance After Mitigation
				<p>address such impacts. Such fee shall be based on a reasonable nexus and be imposed as a condition through dairy project review. The currently-proposed county-wide traffic impact fee does not include dairies or bovine facilities. Should it be modified to do so, credit will be given the dairy or bovine facility applicant by reducing the pavement maintenance mitigation fee by the amount to be paid under a county-wide impact fee program.</p>		

CHAPTER ONE

INTRODUCTION

CHAPTER ONE - INTRODUCTION

1.1 CEQA Requirements

This document is a Draft Program Environmental Impact Report (*EIR*) evaluating the potential environmental effects of the adoption and implementation of an amended Animal Confinement Facilities Plan (*ACFP*) and Dairy Climate Action Plan (*CAP*) (“proposed Program”). It has been prepared in accordance with the California Environmental Quality Act (*CEQA*, Pub. Res. Code Section 21000 *et seq.*) and the *CEQA* Guidelines (14 Cal. Code Regs. Section 15000 *et seq.*).

Tulare County is the Lead Agency responsible for the adoption and implementation of the proposed Program.

The County has prepared a Notice of Preparation and an Initial Study (Appendix C) and circulated it for comments, and has determined that the proposed Program may have a significant effect on the environment and that, as a result, an *EIR* is required. The *EIR* analyzes potentially significant environmental effects, and identifies feasible mitigation measures and alternatives and to substantially lessen or avoid significant environmental impacts.

This *EIR* is an informational document which will inform decision-makers (the County of Tulare Board of Supervisors), other public agencies, and the public about the proposed Program’s significant environmental effects, possible ways to minimize the significant effects, and reasonable alternatives to the proposed Program. (*CEQA* Guidelines Section 15121(a).)

1.2 Prior Environmental Documents

Tulare County prepared a Program *EIR* for Phase I of the existing *ACFP*, and adopted the existing *ACFP*, in the year 2000.¹ The County made a minor amendment to the *ACFP* on October 8, 2002.² In 2006, the County released a Draft Supplemental Program *EIR* for amendments to the *ACFP*,³ but this document never proceeded to a Final *EIR*, and the proposed 2006 amendments were not adopted.

Phase I of the existing *ACFP* refers to “dairy and other bovine animal confinement facilities.” Phase II of the *ACFP* document refers to “all other livestock (including swine, sheep, rabbit, poultry, ratite, and other bird) raising facilities”. The County has not developed or adopted Phase II. The proposed Program for which this *EIR* is being prepared is an update to the Animal Confinement Facilities Plan - Phase I: Dairy/Bovine Animal Confinement Facilities.

1.3 The Program Objectives

The proposed Program is the update of the County of Tulare’s Animal Confinement Facilities Plan, Phase I. It governs dairies and other bovine facilities.

The general Program objectives are as follows:

1. To continue the regulation of the County's dairy industry to protect and enhance the County's resources, assure public health and safety, and minimize environmental impacts;
2. To identify and document those existing bovine facilities which are operating under valid *RWQCB* and *SJVAPCD* approvals, and to specify procedures to achieve compliance by those existing bovine facilities that are not yet in compliance;
3. To modify, as feasible, the scope of County regulatory responsibilities to avoid overlap and duplication with the water quality and air quality oversight provided by the *RWQCB* and the *SJVAPCD*;
4. To update and simplify the permitting processes for bovine facility expansions and the establishment of new bovine facilities consistent with the *ACFP*; and
5. To develop a Dairy and Feedlot Climate Action Plan that analyzes cumulative greenhouse gas (*GHG*) impacts of dairy and other bovine facilities, and streamlines project-specific *GHG* impact analysis.

The detailed proposed Program description is found in Chapter Two of this *EIR*. This proposed Program has been prepared to be consistent with the other elements of the Tulare County General Plan, in particular the Environmental Resources Management Element and the Climate Action Plan. The policies of the proposed Program reinforce, and are reinforced by, the County's General Plan.

1.4 Program EIR

The County of Tulare has determined that a Program *EIR* should be prepared for the proposed Program. A Program *EIR* is described in Section 15168 of the State *CEQA* Guidelines as one that is prepared for a series of actions that can be characterized as one large project, including individual activities carried out under the same statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

A Program *EIR* can provide a comprehensive environmental review for a program of related projects that are to be developed over a long period of time. This allows lead agencies to consider program-wide alternatives and cumulative impacts consistently, and avoids unnecessary repetition of analysis in subsequent project-specific reviews (see *CEQA* Guidelines Section 15168(b)).

The degree of specificity in an *EIR* corresponds to the degree of specificity of the underlying activity being evaluated (*CEQA* Guidelines Section 15146). This *EIR* analyzes impacts of the proposed Program at the same level of detail as the proposed Program. This *EIR* provides a foundation for environmental review of individual projects involving expanded or new dairy or other bovine facilities, but does not analyze the project-specific impacts of individual projects. Project-specific and site-specific details of projects will vary widely.

1.5 Lead and Responsible Agencies

A lead agency is the public agency that has the principal responsibility for carrying out or approving a project (*CEQA* Guidelines Section 15367). Responsible agencies are other public agencies that propose to carry out or approve a project for which a lead agency is preparing an *EIR*, including all other agencies that have discretionary approval for a project (*CEQA* Guidelines Section 15381).

In the case of the proposed Program, Tulare County serves as the lead agency because it will adopt and implement the proposed Program. Responsible agencies that may use *EIR* for permitting and approval of individual dairy and other bovine facility projects include the Central Valley Regional Water Quality Control Board (*CVRWQCB*), the San Joaquin Valley Air Pollution Control District (*SJVAPCD*), and the California Department of Fish and Wildlife (*DFW*).

1.6 Potential Impacts

The Initial Study (Appendix C) and comments received during the Initial Study and Notice of Preparation review period identified the following potential environmental impacts:

- Aesthetics;
- Agricultural Land / Forest Resources;
- Air Quality;
- Biological Resources;
- Cultural Resources;
- Geology/Soils;
- Greenhouse Gas Emissions;
- Hazards and Hazardous Materials;
- Hydrology/Water Quality;
- Land Use/Population/Housing;
- Noise;
- Public and Utility Systems;
- Recreation;
- Transportation/Traffic; and
- Cumulative Impacts.

These impacts are addressed in Chapters Three (direct impacts) and Four (cumulative impacts) of the *EIR*. Other potential impacts that were not identified by commenting agencies and interested parties are also discussed where environmental analysis is warranted.

1.7 Organization of the EIR

CHAPTER ONE

Chapter One of the *EIR* briefly describes the proposed Program, delineates the procedures and methodology for environmental evaluation, outlines the contents of the *EIR*, and lists agency permits and approvals required for implementation.

CHAPTER TWO

Chapter Two of the *EIR* describes the Program objectives, describes the proposed Program in greater detail, and summarizes the general characteristics of the Program location. The proposed Program environmental setting and the general regulatory context of the proposed Program are described.

CHAPTER THREE

The subsections of the Chapter are organized as outlined below.

Introduction

Each environmental topic is preceded by a brief description of the topic-related environment or a brief statement of the rationale for addressing the topic.

Impact Evaluation Criteria

Impact evaluation criteria are the standards or thresholds by which impacts are judged for significance.

Setting

This section provides a description of the existing environment which may be affected by the Program, by topic, and may include a discussion of the applicable regulatory environment.

Impacts

Each impact associated with an environmental topic is described and listed by number for future reference. For some impacts, existing facilities impacts are discussed separately from of new or expanded facilities impacts.

Conclusion

This is a statement identifying whether impacts are significant or less than significant.

Mitigation Measures

Potentially feasible mitigation measures for significant impacts are described. Each proposed mitigation measure is described and listed by number.

Significance after Mitigation

This is a statement that identifies whether proposed mitigation measures would, based on the impact evaluation criteria, reduce significant environmental impacts to less than significant levels.

CHAPTER FOUR

Chapter Four describes the cumulative effects of the proposed Program. It identifies whether cumulative impacts are significant, whether the proposed Program's incremental contribution is cumulatively considerable, and if so whether mitigation measures can reduce the incremental contribution to less than cumulatively considerable.

CHAPTER FIVE

Chapter Five describes and evaluates alternatives to the proposed Program. The proposed Program is compared to each alternative and the environmental impacts of each are analyzed.

CHAPTER SIX

Chapter Six evaluates or describes *CEQA*-required subject areas: growth inducement, significant irreversible environmental changes, and significant environmental effects that cannot be avoided.

CHAPTER 7

Chapter 7 lists persons who prepared the *EIR*.

APPENDICES

Following the text of this Draft *EIR*, several appendices have been included, for example, documentations of the Notice of Preparation process, the Initial Study and air quality modeling; they provide supporting information for the *EIR*'s environmental analysis.

1.8 Uses of the EIR and Agency Permits and Approvals

If the County of Tulare approves amendments to the *ACFP* and the Dairy *CAP*, the Program *EIR* would be used for subsequent project-specific permits and approvals, such as:

- Amendment of the County zoning ordinance to be consistent with the amended *ACFP*;
- *CVRWQCB* and *SJVAPCD* issuance of permits or other approvals for existing dairies and other bovine facilities not currently in compliance with regulatory requirements of these agencies;

- County validation that existing dairies and other bovine facilities comply with *CVRWQQB* and *SJVAPCD* requirements;
- *CVRWQCB* and *SJVAPCD* issuance of permits or other approvals for expanded and new dairies and other bovine facilities; and
- County permitting of expanded and new dairies and other bovine facilities.

1.9 CEQA Procedures

On November 30, 2011, an Initial Study was prepared and a Notice of Preparation (*NOP*) was circulated for review and comment by responsible, trustee, and local agencies as well as interested parties. Copies of the Notice of Preparation and comments received are included in Appendix C of this *EIR*. A scoping meeting was duly noticed and held on February 2, 2012.

This Draft *EIR* will be circulated for public comment. Following completion of the 45-day public review period for this *EIR*, staff will prepare responses to comments and a Final *EIR* will be prepared. The County of Tulare Planning Commission will consider whether to recommend certification of the Final *EIR*, and the Board of Supervisors will then decide whether to certify the document. Once the Final *EIR* is certified, the Board of Supervisors will decide whether to adopt CEQA findings for significant impacts, a statement of overriding considerations⁴ (if necessary), and a Mitigation Monitoring and Reporting Program, and then decide whether to approve the proposed Program. If the proposed Program is approved, a Notice of Determination will then be filed with the County of Tulare County Clerk and forwarded to the Governor's Office of Planning and Research.

REFERENCES

¹ Tulare County. 2000. Animal Confinement Facilities Plan and Final EIR. <http://generalplan.co.tulare.ca.us/>

² Tulare County. 2002. Amendment GPA 01-001, Animal Confinement Facilities Plan. <http://generalplan.co.tulare.ca.us/>

³ Tulare County. 2006. Phase I Animal Confinement Facilities Plan Draft EIR. <http://www.tularecounty.ca.gov/rma/index.cfm/documents-and-forms/planning-documents/minerals-and-resources/supplemental-program-eir-for-the-acfp/>

⁴ Section 15093 of the State *CEQA* Guidelines requires decision-makers to balance the benefits of a proposed project against any unavoidable significant environmental effects. If the benefits of the project outweigh the unavoidable adverse environmental effects, then the decision-makers may adopt a statement of overriding considerations, finding that the environmental effects are "acceptable."

CHAPTER TWO

PROGRAM DESCRIPTION, OBJECTIVES AND ENVIRONMENTAL SETTING

CHAPTER TWO - PROGRAM DESCRIPTION, OBJECTIVES AND ENVIRONMENTAL SETTING

2.1 Program Description

2.1.1 BACKGROUND

In August 2012, the County adopted the 2030 General Plan Update and a Climate Action Plan to address greenhouse gas emissions. The 2030 General Plan Update did not include an update to the existing Animal Confinement Facilities Plan (2000 *ACFP*), but instead provided for a separate subsequent process to update the 2000 *ACFP* with its own Environment Impact Report. The County’s Climate Action Plan did not cover emissions from dairy and other bovine facilities, but instead called for preparation of a separate Dairy Climate Action Plan (*Dairy CAP*).

The general purpose of the proposed Program is to adopt an updated *ACFP* Update (*Dairy CAP*). The proposed Program is designed to improve the way dairies and other bovine confinement facilities are regulated by the County and to reflect changes in statewide and regional regulatory requirements since the adoption of the existing 2000 *ACFP*.

The proposed Program is intended to address potential growth in dairies and other bovine facilities through expansions of existing facilities and the establishment of new facilities for the ten-year period from baseline year 2013 through 2023. The baseline total annual bovine head count in Tulare County has been slightly above one million head for the past several years. The total head count for the years 2011 through 2013 ranged between 1,005,690 and 1,037,137, as shown in Table 2.1-1. Fluctuations in head count in individual facilities are standard due to the shifting allocations between mature milk cows and other support stock.

**Table 2.1-1
Tulare County Dairy Animal Population
(Existing 2011-2013/Projected 2023)**

Animal Type	No. of Head 2011	No. of Head 2012	No. of Head 2013	No. of Head 2023
Milk Cows	509,550	502,825	485,785	592,013
Dry Cows & Springers (Inc. Bulls)	96,866	93,471	89,519	112,542
Heifers (15-24 months)	166,090	168,910	173,261	192,969
Heifers (7-14 months)	132,871	135,128	138,609	154,374
Heifers (3-6 months)	66,071	67,193	68,923	76,764
Calves (0-2 months)	65,689	49,493	49,593	76,320
Total	1,037,137	1,017,020	1,005,690	1,204,981

To provide a conservative estimate for purposes of assessing the cumulative impacts of existing and projected future growth in bovine facilities over the ten-year period, the total head count assumed for baseline year 2013 is 1,037,137, the highest of the reported levels in years 2011 through 2013. Even though head count has actually been declining in recent years (see

Appendix L), to provide a conservative impact analysis this *EIR* assumes a 1.5% percent annual growth rate in head count.

2.1.2 PROGRAM OBJECTIVES

The general Program objectives are as follows:

1. To continue the regulation of the County's dairy industry to protect and enhance the County's resources, assure public health and safety, and minimize environmental impacts;
2. To identify and document those existing bovine facilities which are operating under valid *RWQCB* and *SJVAPCD* approvals, and to specify procedures to achieve compliance by those existing bovine facilities that are not yet in compliance;
3. To modify, as feasible, the scope of County regulatory responsibilities to avoid overlap and duplication with the water quality and air quality oversight provided by the *RWQCB* and the *SJVAPCD*;
4. To update and simplify the permitting processes for bovine facility expansions and the establishment of new bovine facilities consistent with the *ACFP*; and
5. To develop a Dairy and Feedlot Climate Action Plan that analyzes cumulative greenhouse gas (*GHG*) impacts of dairy and other bovine facilities, and streamlines project-specific *GHG* impact analysis.

2.1.3 PROPOSED PROGRAM DESCRIPTION

The primary components of the proposed Program are as follows.

ACFP (see Appendix A for details).

For existing bovine facilities:

- Development of an *ACFP* List that documents each existing bovine facility, specifying a County-permitted herd size for each facility consistent with the permitted herd sizes under existing valid County, Central Valley Regional Water Quality Control Board (*CVRWQCB*) and San Joaquin Valley Air Pollution Control District (*SJVAPCD*) approvals; and
- A process requiring those existing facilities not operating in compliance with valid *CVRWQCB* or *SJVAPCD* approvals to achieve compliance.

For proposed expansions of existing bovine facilities:

- Use of a Conformance Checklist Review procedure, available only to existing facilities that are in compliance with valid *CVRWQCB* and *SJVAPCD* approvals for existing operations and facilities. In order to qualify, the proposed expansion must meet specified criteria,

including compliance with the *ACFP*, the *ACFP EIR* and the Dairy *CAP*. A new *CEQA* document would not be required for such expansions, which would use this *ACFP EIR* for *CEQA* compliance;

- All other proposed expansions of existing facilities would require the approval of a Special Use Permit and individual environmental review under *CEQA*; and
- All approvals of proposed expansions would be conditioned upon compliance with the applicable permitting and operational regulations of the *CVRWQCB* and the *SJVAPCD*, as administered by those agencies.

For new bovine facilities:

- All new bovine facilities would require the approval of a Special Use Permit and individual environmental review under *CEQA*;
- County approvals of new facilities would be conditioned upon compliance with applicable permitting and operational regulations of the *CVRWQCB* and *SJVAPCD*, as administered by those agencies.

For both facility expansions and new facilities:

- Design and operational standards are specified for 13 topics, including minimum acreage, site access, water wells, lagoon locations, facility setbacks, and air, water quality, and flood regulatory compliance;
- The location, siting and separation standards of the 2000 *ACFP* have been largely retained. These are intended to achieve the goals of maintaining land use compatibility and avoiding environmental constraints;
- Application requirements applicable to County approvals are specified; and
- The filing of Annual Compliance Reports is required and would be utilized to update the *ACFP* List for each facility.

Dairy *CAP* (see Appendix B for details).

The Dairy *CAP* includes the following elements:

- A summary of the regulatory setting in addressing climate change and *GHG* emissions from dairies and other bovine facilities, including the Scoping Plan and *CEQA*;
- An emissions inventory quantifying *GHG* emissions from dairies and other bovine facilities, both at existing levels and at levels projected for future year 2023 based on projected growth due to expansions of existing facilities and new facilities;

- The identification and evaluation of *GHG* reduction strategies applicable to expansions of existing facilities and new facilities, as set forth in Table 2.1-2, including strategies for dairy operations, energy conservation and efficiency, transportation, water, solid waste and recycling. Due to the variations in individual facilities, the feasibility of reduction strategies is highly dependent on various factors, including management practices and facilities characteristics. Those reduction strategies listed in Category A are practices that are likely to be feasible at a greater range of facilities. Those listed in Category B are not expected to be feasible at a majority of facilities and are available to serve as substitutes for performance of Category A reduction strategies; and
- The establishment of procedures for utilizing the Dairy *CAP* in the County’s *CEQA* review of proposed expansions of existing facilities and new facilities. This includes provisions for the incorporation of *GHG* reduction strategies in individual projects on a case-by-case basis. A full project *GHG* analysis under *CEQA* is required for all new dairies. The expansion of an existing facility may qualify for a streamlined *GHG* analysis under *CEQA* only if the expansion’s projected *GHG* emissions are less than 25,000 metric tons per year and the expansion either incorporates all Category A reduction strategies or substitutes an equal number of Category B reduction strategies for any excluded Category A reduction measures or establishes that excluded Category A reduction measures are infeasible. All expansion projects that do not meet the requirements for streamlined *GHG* analysis will require a full project analysis under *CEQA*.

**Table 2.1-2
Reduction Strategies for Implementation at New or Expanding Dairy Facilities**

Category A Reduction Strategies
Implement environmentally responsible purchasing of feed additives (i.e. use locally sourced materials and/or agricultural by-products such as citrus pulp and almond hulls, when available). This measure must be consistent with <i>TMR</i> or other efficient feeding strategies, as well as animal health and efficient milk production requirements.
Use a Total Mixed Ration or other efficient feeding strategy intended to maximize feed-to-milk production efficiency in lactating cows.
Comply with nutrient management plans to reduce fertilizer requirements (i.e., <i>GHG</i> emissions associated with fertilizer production and transportation).
Comply with air and water quality plans to achieve <i>GHG</i> benefits (e.g., less water usage).
The farm must meet or exceed Title 24 standards in climate-controlled buildings (e.g., not barns).
Provide verification of energy savings (e.g., electric bills or third-party verification).
Install energy efficient boilers.
Install efficient appliances (e.g., for milk cooling).
Install energy efficient area lighting.
Provide bike parking if requested by employees.
Provide end of trip facilities if requested by employees (e.g., shower for people biking).
Adopt a water conservation strategy.
Design water-efficient landscapes (decorative landscaping only).
Use water-efficient landscape irrigation systems (decorative landscaping only).
Reduce turf in landscapes and lawns (decorative landscaping only).
Plant native or drought-resistant trees and vegetation (decorative landscaping only).
Category B Reduction Strategies
Use a digester, designed and operated per applicable standards, and the captured methane for energy use to displace fossil fuel use.
Use of scrape systems to divert manure from lagoon to another part of the storage system.

Category B Reduction Strategies
Increase solids separation.
Establish onsite renewable energy systems – Solar power.
Establish onsite renewable energy systems – Wind power.
Utilize a combined heat and power system.
Establish methane recovery on digester.
Provide employer-sponsored vanpool/shuttle.
Increase transit accessibility if adjacent to public transportation.
Implement intra-farm bike-sharing.
Utilize alternative fueled vehicles on-site.
Utilize electric or hybrid vehicles on-site.
Institute or extend recycling and composting services.
Use locally sourced well or surface water.
Install low-flow water fixtures (decorative landscaping only).
Recycle demolished construction material.
Plant trees.
Use alternative fuels for construction equipment (Construction only).
Use electric and hybrid construction equipment (Construction only).
Limit construction equipment idling beyond regulation requirements (Construction only).
Institute a heavy-duty off-road vehicle plan (Construction only).
Implement a construction vehicle inventory tracking system (Construction only).
Use local and sustainable building materials (Construction only).
Additional <i>BMPs</i> in agriculture and animal operations.
Environmentally responsible purchasing.
Implement an innovative strategy for <i>GHG</i> Reductions.

Source: Tulare County. 2015. Draft Dairy and Feedlot Climate Action Plan.

2.1.4 CHANGES FROM EXISTING ACFP

Procedurally, the proposed *ACFP* adds a new process for County authorization of existing dairies and other bovine facilities, and streamlines *CEQA* compliance and permitting for facility expansions in compliance with the *ACFP*, the *ACFP EIR* and the Dairy *CAP*. Substantively, the proposed *CFP* deletes the existing *ACFP*'s method of determining herd size based upon waste by-product control, and instead provides that maximum herd sizes allowed will be those authorized by *CVRWQCB* and *SJVAPCD* regulations and permits. It also makes certain detailed modifications to the existing *ACFP*'s policies and standard conditions.

2.2 Program Location

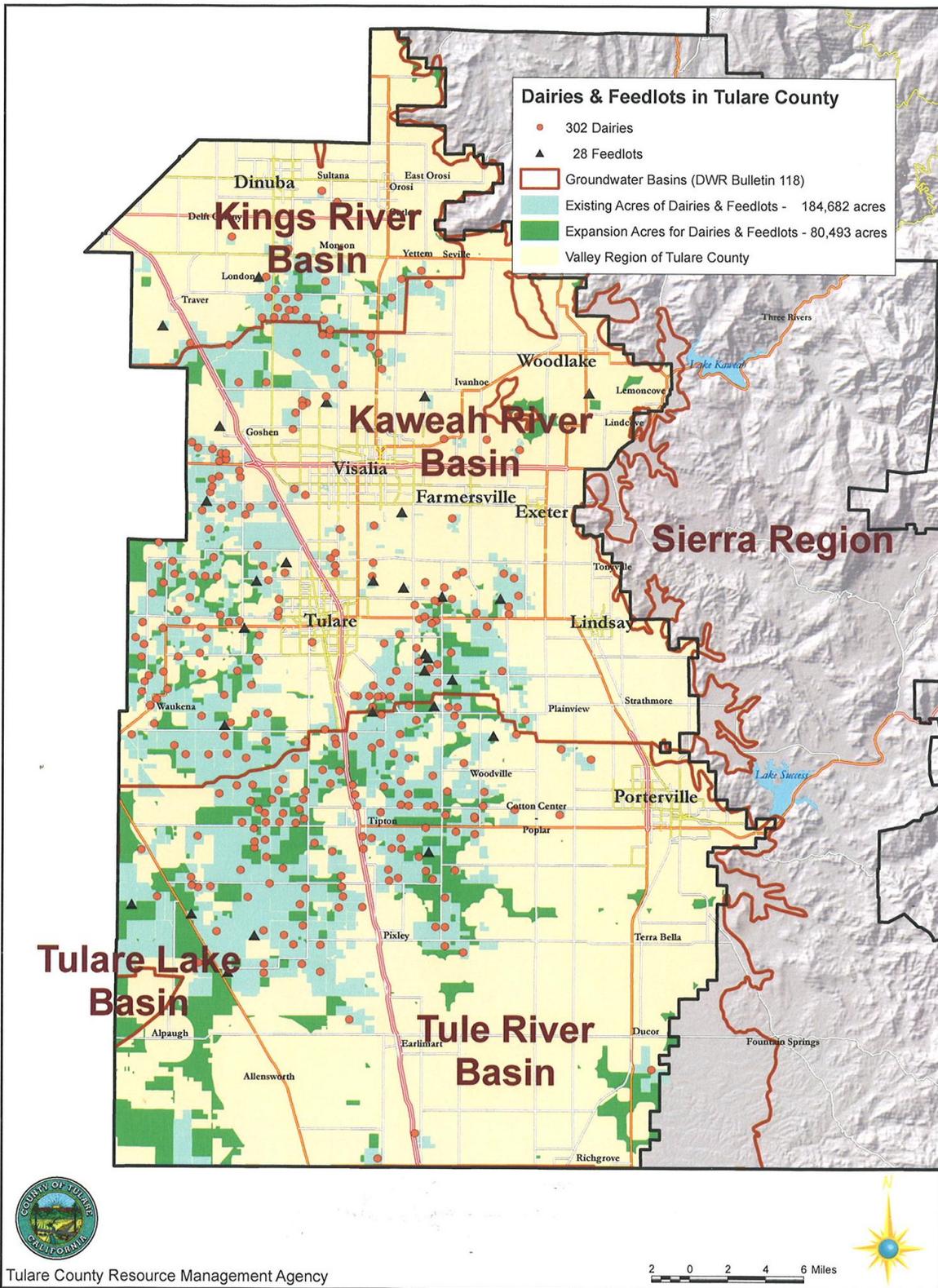
Tulare County lies in the southern half of and on the east side of the San Joaquin Valley, the great central valley of California, which is bounded on three sides by mountains - the Coast Range to the west and the Sierra Nevada to the east and south (see Figure 2-1). The County is approximately 4,863 square miles in area and encompasses approximately 3,112,320 acres. Federal and state owned lands comprise approximately 51 percent of the County area.

The County is divided into three distinct geographic planning areas: mountains, foothills, and the Valley floor. The Valley floor lies within the western approximate one-third of the County, encompassing lands generally below 600 feet in elevation. The portion of the County referenced as the Valley floor contains almost all of the County's confined animal facilities (see Figure 2-2).



TULARE COUNTY

Figure 2 - 1



DAIRIES AND FEEDLOTS IN TULARE COUNTY

Figure 2 - 2

2.3 Program Background

Information provided by the Tulare County Agricultural Commissioner in the 2013 Annual Crop Report details the financial impact of the dairy industry on the local economy. Milk production values in Tulare County were over \$2.1 billion in 2013 representing 27 percent of the County's total agricultural income. Milk has been a leading farm commodity in Tulare County since 1988. Increasing the importance of dairy farming in Tulare County is the value of other high-value crops grown in the County which are directly related, such as alfalfa hay and silage (\$176 million), grain and silage corn (\$256 million), and small grain silage (\$149 million).¹

Dating back to 1930 there were 1,100 dairies in Tulare County operating with an average size of 31 milk cows. This translated into a herd of about 34,100 milk cows. By 1980 there was one-fourth as many dairies, but three times as many cows. Just 236 dairies remained in business, yet they milked a total of 120,695 cows for an average herd size of 511 cows.²

As of December 2013 there were approximately 330 existing bovine facilities, consisting of approximately 302 dairies and 28 cattle feedlots, with a total Countywide herd of approximately one million bovine.³ The locations of these dairies and the 28 feedlots that raise some of the dairy support stock (calves and heifers) are shown in Figure 2-2. These dairy and feedlot facilities, together with adjacent dairy cropland, occupy approximately 184,881 acres. The potential expansion acreage for new or expanding dairies and feedlots in Tulare County based upon zoning designations and taking into account siting constraints, such as locational and siting limitations under the *ACFP*, encompasses approximately 80,493 acres and is depicted on Figure 2-2. (Additional background figures are in Appendix O.)

Dairy herd sizes range from 200 milking cows (principally older facilities) to 5,000 milking cows in newer or expanded facilities. Feedlots, heifer ranches and calf ranches range from five acres to 560 acres in size.

Since 1974, the County of Tulare has regulated and issued use permits for dairies and other bovine facilities, strengthening such regulations and permitting policies and procedures with the adoption of an Animal Confinement Facilities Plan in 2000. Dairy facilities have during that period been subject to regulation by the *CVRWQCB* and the *SJVAPCD*.

The existing regulatory structure is briefly described in the next subsection of this Chapter. Laws and regulations pertinent to each environmental topic are noted in the appropriate subsections of Chapter Three and Chapter Five of this *EIR*.

2.4 Regulatory Setting

The following are major regulatory agencies pertinent to dairy and other bovine facility permitting and operations in the County:

FEDERAL

The Environmental Protection Agency has the authority to issue (*NPDES*) permits for discharges of pollutants into waters of the United States. In California, this authority has been delegated to the State Water Resources Control Board and Regional Water Quality Control Boards.

STATE

The Central Valley Regional Water Quality Control Board, using General Order Waste Discharge Requirements for Existing Milk Cow Dairies, Order No. R5-2013-0122 and implementing policies, regulations, individual-facility Waste Discharge Reports or *NPDES* permits, and annual monitoring reports, regulates dairies and other bovine facilities to protect groundwater and surface waters.

REGIONAL

Under Federal and State authority, the San Joaquin Valley Air Pollution Control District issues individual facility permits under its implementing policies and regulations. These permits are Authorities to Construct (*ATC*) and Permits to Operate (*PTO*) which regulate dairy and other bovine facilities, thereby protecting the San Joaquin Valley's air quality.

LOCAL

The County of Tulare, through the Resource Management Agency (*RMA*), permits and regulates dairies and other bovine animal facilities under its adopted Animal Confinement Facilities Plan.

In addition to these regulatory authorities and processes, and to topic-specific regulations, there are other special permitting regulatory actions and controls. For example, new facilities or expansions of existing facilities when appropriate, must obtain a building permit from the *RMA* to permit new construction in addition to obtaining or maintaining a Dairy Permit from the California Department of Food and Agriculture, Milk and Dairy Food Control Division.

2.5 Regional Setting

The regional setting for the proposed Program is generally described in the Tulare County General Plan Recirculated Draft EIR.⁴ The land surrounding dairy and bovine animal sites is primarily dedicated to field crops such as corn and alfalfa, which will in part be used as feed for dairy animal herds. These crops are irrigated with groundwater or surface water. The groundwater basin in the southern San Joaquin Valley is the Tulare Lake Basin which covers the area south of the San Joaquin River and includes Kings County and western (valley) portions of Fresno, Tulare and Kern Counties.

The climate of the Program area and most of the San Joaquin Valley can be characterized as Mediterranean with hot and dry summers while the winters are cool and periodically humid. Mean daily maximum temperatures range from a low of approximately 57 degrees F in December and January to a high of about 99 degrees F in July.

Rainfall typically occurs during the six months from November to April. December and January generally experience dense fog, mostly nocturnal, caused when moist cool air is trapped in the valley by high-pressure systems. In some cases, this fog may last continuously for two or three weeks. Its depth is usually less than 3,000 feet.

The Program area is subject to characteristic seasonal airflows. During the summer, air currents from the Pacific Ocean enter the Valley through the San Francisco Bay and Delta region and are forced down the valley. These air movements are primarily to the southeast at velocities of six to ten miles per hour. During the winter, cold air flowing off the surrounding mountains may result in currents toward the northwest with wind velocities ranging from zero to five miles per hour. These airflows result in extensive horizontal mixing of air masses in the Valley. However, vertical dispersion is constrained by temperature inversions, an increase in air temperature in a stable atmospheric layer, which may occur throughout the year. Such an increase is a reversal of the normal temperature condition of the troposphere, where temperature usually decreases with altitude. Inversions play an important role in determining cloud forms, precipitation, and visibility. An inversion acts as a lid, preventing the upward movement of the air below it. Where a pronounced inversion is present at a low level, convective clouds cannot grow high enough to produce showers and, at the same time, visibility may be greatly reduced by trapped pollutants. Because the air near the base of the inversion is cool, fog is frequently present there.

The Program area lies within the Tulare County portion of the San Joaquin Valley Air Basin. The air quality of the Valley is directly related to the ability of the atmosphere to disperse and transport pollutants. The climate and meteorology within the Valley are conducive to the creation and entrapment of air pollution. Air pollution within the Valley is, in part, a result of the closure of the air basin, which experiences long periods of inversion, a relatively light wind flow, and a generous amount of sunlight. The Basin is comprised of eight counties: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and central and western Kern. The Basin periodically exceeds State and/or federal standards for levels of ozone and fine particulate matter.

The natural vegetation communities of the southern San Joaquin Valley historically supported a diverse assemblage of plant and animal species. The conversion of native and naturalized plant communities by agricultural development, road construction, and urbanization has significantly reduced available wildlife and plant habitat. As a result of this conversion, several species of both plants and animals have been extirpated (that is, completely removed) from the southern San Joaquin Valley, and populations of other species have declined. State and federal legislation, the California Department of Fish and Wildlife and the United States Fish and Wildlife Service have listed several southern San Joaquin Valley species as threatened, endangered, candidates for state or federal listing, "sensitive species", "special-status species", or "species of concern". The likelihood of their appearance in the Program area is reduced by the prior conversion of native vegetation in the area to intensive agriculture.

The topography of the Program area is essentially flat with slopes, prior to agricultural land leveling, averaging 10 feet to the mile toward the southwest. The southern San Joaquin Valley, approximately 10,000 square miles, is a broad structural trough bordered by the Sierra Nevadas

on the east, the Coastal Ranges on the west and the Transverse Range on the south. The occurrence of groundwater is directly related to the geology and soils in the region. Fresh groundwater is principally contained in the unconsolidated continental deposits of the Pliocene to the Holocene age, which extend to depths ranging from less than 100 to more than 3,000 feet.

REFERENCES

¹ 2013 Tulare County Agricultural Crop and Livestock Report, July 2014.

<http://agcomm.co.tulare.ca.us/default/index.cfm/standards-and-quarantine/crop-reports1/crop-reports-2011-2020/2014-crop-report/>

² The Economic Value of Dairies in Tulare County in 2013 and 2023 (see Appendix L)

³ Individual Dairy Annual Compliance Report Data (year 2011-2013), Tulare County Resource Management Agency 2014 <http://www.tularecounty.ca.gov/rma>

⁴ Tulare County General Plan Recirculated Draft EIR. <http://generalplan.co.tulare.ca.us>

CHAPTER THREE

SETTING, IMPACTS AND MITIGATION MEASURES

CHAPTER THREE - SETTING, IMPACTS AND MITIGATION MEASURES

Introduction

This section of the *EIR* addresses topics required by the California Environmental Quality Act (*CEQA*). Each topic (e.g., biological resources, air quality) includes a description of existing environmental or regulatory conditions for the proposed Program in its Setting subsection. The Impacts and Mitigation Measures section for each topic addresses any impacts specifically related to the Program.

Each impact is briefly described (“headed”) and numbered in bold lettering. Text then follows to provide discussion and analysis. At the end of the impacts discussion, mitigation measures are listed and numbered to correspond to the numbered impacts; conclusions will be correspondingly numbered. The summary table in the Executive Summary includes the same text headings and the mitigation measures that are described in Chapter 3.

Focus. The *EIR* and the discussion in this Chapter have been focused consistent with the scoping process provided for in Public Resources Code 21080.4(a) and *CEQA* Guidelines 15082, relying upon the Initial Study and Notice of Preparation circulated by the County of Tulare and comments provided by responsible agency/trustee agency responses. Discussion of environmental topics not identified by this process as requiring analysis in depth has not been eliminated but has been minimized to that essential for environmental evaluation. A scoping meeting to assist in the evaluation was duly noticed and held by the County on February 2, 2012.

Determination of Significance. Under *CEQA*, a significant impact is defined as a substantial, or potentially substantial, adverse change in the environment (Public Resources Code 21068). The criteria for determining significance of a particular impact are identified prior to the impact discussion in each topical section, and are consistent with significance criteria set forth in Appendix G of the State *CEQA* Guidelines.

Baseline and Target Year. The baseline for *CEQA* analysis is normally the time of NOP publication (*CEQA* Guidelines Section 15125(a)), which for this *EIR* was December 2011. Impact analyses therefore generally use a 2011 baseline. For certain quantitative impact analyses,¹ the year 2013 is used as a baseline, but uses 2011 herd count to provide a more conservative analysis since 2011 herd count was slightly higher than 2013. These quantitative analyses then use a 1.5% growth rate, based on recent trends, to allow for a 10-year analysis until the year 2013. The year 2023 is used as the target year for quantitative impact analyses because it is a reasonable date for which data, environmental, and regulatory projections can be made without excessive speculation.

Impacts of Draft Dairy CAP. The impact analyses in this chapter include a programmatic analysis of implementing the Draft Dairy CAP measures. Although the Draft Dairy CAP would have beneficial *GHG*, air quality, and energy impacts, individual *GHG* reduction measures could have adverse construction or operational impacts. Because project- and site-specific information is not available for these measures, their impacts are evaluated in this Program *EIR* at a general,

programmatic level. The following *GHG* reduction strategies requiring construction are evaluated as a group rather than individually since the types of construction impacts would generally be similar:

- D5: Use a digester, designed and operated per applicable standards, and the captured methane for energy use to displace fossil fuel use;
- E3: Install energy efficient boilers;
- E4: Install energy efficient appliances;
- E5: Install energy efficient area lighting;
- E6: Establish onsite renewable energy systems--solar power;
- E7: Establish onsite renewable energy systems--wind power;
- E8: Use a combined heat and power system;
- E9: Establish methane recovery on digester;
- M1: Plant trees;
- R2: Design water-efficient landscapes;
- R3: Use water-efficient landscape irrigation systems;
- R4: Reduce turf in landscapes and lawns;
- R5: Plant native or drought-resistant trees and vegetation;
- R7: Use locally sourced well or surface water;
- R8: Install low-flow water fixtures (decorative landscaping only);
- T1: Provide bike parking if requested by employees; and
- T2: Provide end of trip facilities if requested by employees.

REFERENCES

¹ Air quality, greenhouse gas, transportation, and water supply.

3.1 Aesthetics

INTRODUCTION

This subsection addresses Program impacts on the visual and aesthetic character of the Program area. Issues include potential impacts to scenic views and vistas, potential disturbance of rural characteristics, alteration of agricultural uses (from the perspective of aesthetics), and impacts associated with an increase in light sources.

IMPACT EVALUATION CRITERIA

Criteria for evaluating adverse effects on scenic resources are included in Appendix G of the State *CEQA* Guidelines as:

Would the project:

- a) *Have a substantial adverse effect on a scenic vista?*
- b) *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*
- c) *Substantially degrade the existing visual character or quality of the site and its surroundings?*
- d) *Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

REGULATORY SETTING

The following environmental and regulatory settings were, in part, summarized from information contained in the Tulare County General Plan 2010 Background Report.

Federal Regulations

There are no applicable federal regulations.

State Regulations

California Scenic Highway Program¹

Many State highways are located in areas of outstanding natural beauty. California's Scenic Highway Program was created by the Legislature in 1963 to preserve and protect scenic highway corridors from change which would diminish the aesthetic value of lands adjacent to highways. The State laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. The State Scenic Highway System includes highways that are either eligible for designation as scenic highways or are currently designated. These highways are identified in Section 263 of the Streets and Highways Code.

Local Regulations

The Tulare County General Plan includes a number of policies that protect scenic resources. Many of these are found in the Scenic Landscapes Element.

ENVIRONMENTAL SETTING

Tulare County is located in a predominately agricultural region of central California. The terrain in the County varies, with flat agricultural areas in the western portion of the County that gradually transform to the foothills and the Sierra Nevada mountain range to the east. Many communities are small and rural, surrounded by agricultural uses such as row crops, orchards, and dairies. Approximately half the County is currently used for agricultural production and grazing.²

From several locations on major roads and highways throughout the County electric towers and telephone poles are noticeable. Mature trees, development, utility structures, and other vertical forms are highly visible in the region because of the flat terrain, although where such vertical elements are absent, views are expansive. The prevailing colors in the County are the greens and browns associated with agricultural land use. Most structures are small, usually one story in height, though occasionally two story structures can be seen. Exceptions can be found in the downtown commercial areas of urban locations and in industrial-agricultural complexes.

There are three highway segments in Tulare County designated as eligible State scenic highways by the State. These include State Route (SR) 198 from Visalia to Three Rivers, SR 190 from Porterville to Ponderosa, and SR 180 extending through Federal land in the northern portion of Tulare County. SR 198 closely follows around Lake Kaweah and adjacent to the Kaweah River, while SR 190 follows around Lake Success and adjacent to the Tule River. Both these highways traverse through agricultural areas of the valley floor to the foothills and the Sierra Nevada Mountain Range.

There are primarily two sources of light intrusion:³

- Light emanating from structural interiors and passing through windows; and
- Light from exterior sources, such as street lighting, building illumination, security lighting, event lighting, traffic headlights, and landscape lighting.

Existing sources of light and glare within the County are primarily in the cities, communities, hamlets, and other urban development areas. It is anticipated that new sources of light and glare (resulting from build-out of the General Plan) will primarily occur within and around these urbanized areas. A majority of the County is used for agricultural purposes (with some scattered rural residential uses) and therefore currently contains limited sources of light and glare.

IMPACTS

Impact #3.1.1 - Scenic Vistas and Visual Character: [Evaluation Criteria (a), (c)]

Visual compatibility impacts of the proposed Program are determined by assessing the visual resource change and assessing viewer response to change. Visual resource compatibility is determined by evaluation of both changes in visual character and changes in visual quality.

The first step is to assess the compatibility of the Program with the visual character of the existing landscape. The second step is to compare the visual quality of the existing resources with projected visual quality after implementation of the Program.

Dairies and other bovine facilities are typically located on flat areas of Tulare County characterized by irrigated agriculture and low rise agricultural structures and rural dwellings. Scenic resources within the County include views of the Sierra Nevada Mountains and the agricultural croplands that blanket the valley floor. The existing dairies and other bovine animal facilities in the County, regardless of when they were built, share the low rise agricultural structure and rural dwelling characteristics which were required by existing County of Tulare building Zoning Ordinance (Section 9.7) requirements (see Figure 3.1-1 Typical Dairy Viewshed). Continued development of confined dairy and bovine facilities under the proposed Program would be consistent with current agricultural uses.

The scale of the typical expanded or new dairy or other bovine facility must be similar to that of other agricultural and residential buildings in the agricultural areas of Tulare County.⁴ Assuming continuation of the design of almost all recently constructed dairies, views experienced by motorists traveling on nearby roads are and will be primarily of the dairy milking barn, feedlot enclosures, freestall barns, hay barns, commodity barns, partially shaded corrals and cattle in the front of the property. Other facility components such as manure and hay storage and treatment ponds may not be as readily visible to motorists.

It should be noted that the proposed amended *ACFP* has a number of provisions to reduce the adverse visual impacts of expanded and new dairies and other bovine facilities. These include policies to site facilities within designated agricultural zoned areas where they have been determined to be compatible with surrounding land uses, and to use specific zoning and separation standards to avoid potential land use conflicts. Compliance with *ACFP* policies and the County's zoning ordinance would assure that expanded or new dairy and other bovine facilities would not have substantial adverse effects on scenic vistas or substantially degrade visual character.

Also, a few of the Draft Dairy *CAP GHG* reduction measures, such as onsite solar or wind power systems, could have adverse visual impacts, but the extent and locations of such facilities are too speculative to allow meaningful evaluation.

Conclusion: Because the proposed Program would not have a substantial adverse effect on a scenic vista or substantially degrade the existing visual character, impacts of the proposed Program are *less than significant*.



Figure
3.1 – 1

TYPICAL DAIRY VIEWSHED



Mitigation Measures: None are required.

**Impact #3.1.2 - Scenic Resources:
[Evaluation Criteria (b)]**

New or expanding dairies and bovine facilities would be located in established agricultural areas where the land has been leveled and graded for irrigated cropland. What few native trees remain are situated along creek banks or irrigation canals. Any rock outcroppings or other such scenic anomalies in the flat valley terrain have generally been removed when the land converted to intensive agricultural uses. Tree resources have, in general, long since been removed by prior agricultural development; to the limited extent to which they remain, they border creeks and waterways avoided by dairies and bovine facilities because of flooding potential.

The eligible-scenic highway segments (*SR 190* and *SR 198*) in the Program area travel through agricultural lands within the easterly portions of the valley floor and continue into the foothills and mountains of the Sierra Nevadas. The amended *ACFP* would not allow new or expanded dairies and other bovine facilities within the foothill or mountain areas of the County. Expanded or new dairies and other bovine facilities would not have substantial effects on eligible scenic highways on the valley floor because there are no dairies or feedlots adjacent to the eligible-scenic segments of *SR 190* or *SR 198* and no projected dairy or feedlot development adjacent to these segments (see Figure 2-2).

Based on the above analysis, the proposed Program would not substantially damage scenic resources, including eligible State scenic highways.

Conclusion: Because the proposed Program would not substantially damage scenic resources, the impact of the proposed Program is *less than significant*.

Mitigation Measures: None are required.

**Impact #3.1.3 - Light and Glare:
[Evaluation Criteria (d)]**

Land uses such as residences, hospitals, and hotels are considered light sensitive, as they are typically occupied by persons who have expectations for privacy during evening hours or are subject to disturbance by bright light sources. At night, lights from cities and communities illuminate the developed areas, providing contrast with the generally uninterrupted darkness of the surrounding agricultural lands and mountains. The preservation of views of the night sky has been identified as valuable to agricultural area residents.

Glare results mainly from sunlight reflection off flat building surfaces, with glass and reflective metal typically contributing to the highest degree of reflectivity. Glare can also be produced during evening and nighttime hours by artificial light sources such as automobile headlights and outdoor area operational and security lighting. Glare generation is also related to sun angles; glare resulting from reflected sunlight can occur regularly at certain times of the year.

The remote, agricultural locations of expanded or new dairies and other bovine facilities mandated by the Tulare County Zoning Ordinance and the buffer requirements of the *ACFP* preclude any significant impact from light emanating from structural interiors and passing through windows or reflected from windows or metallic surfaces.

Regarding glare from vehicle headlights, even if 50% of passenger vehicle and truck traffic serving dairies and other bovine facilities is at nighttime (a conservatively high percentage since most dairies milk twice daily), the total glare-producing traffic ascribed to the operation of such facilities (see Section 3.14 of this *EIR*) is less than significant compared to total traffic volumes on affected County roads and State highways.

Outdoor lighting, unless located or designed to direct illumination downward and onsite at new or expanded dairies and other bovine facilities, could create excessively bright sky views or offsite glare. This could be a significant impact, based on the locations of sensitive receptors.

Conclusion: Because the proposed program would create a new source of substantial light or glare which would adversely affect day or nighttime views in the area, this impact is *significant*.

Mitigation Measure #3.1.3: Outdoor lighting at expanded or new dairies and other bovine facilities shall be designed and installed to direct all illumination downward and onsite.

Significance after Mitigation: With implementation of the above mitigation measure, the proposed Program's light and glare impact would be *less than significant*.

REFERENCES

¹http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/scenic_hwy.htm, accessed December 1, 2015.

² County of Tulare. 2010. General Plan Background Report. Tulare County, CA. <http://generalplan.co.tulare.ca.us>

³ County of Tulare. 2010. General Plan Background Report. Tulare County, CA. Page 11-27- 11-28. <http://generalplan.co.tulare.ca.us>

⁴ County of Tulare. Revised September 2005. Ordinance No. 352, Section 9.7. Tulare County Zoning Ordinance. Tulare County, CA. www.tularecounty.ca.gov/rma/index.cfm/documents-and-forms/planning-documents/tulare-county-zoning-ordinance/section-097-e2809cae-40e2809d-exclusive-agricultural-zone-40-acre-minimum

3.2 Agricultural Land/Forest Resources

INTRODUCTION

This section addresses proposed Program impacts on the County's agriculture and forest resources. The Program will have no impact on forest resources because its dairies and supportive bovine facilities are exclusively constructed and operated on the Valley floor and thus are not in or near the County's forests which are located solely in foothill (oak) or Sierra (conifer) areas.

IMPACT EVALUATION CRITERIA

CEQA Guidelines Appendix G criteria for evaluating adverse effects on agricultural land or forest resources are:

Would the project:

- a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to non-agricultural uses?*
- b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?*
- c) Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code § 12220(q), timberland (as defined by Public Resources Code § 4526), or timberland zoned Timberland Production (as defined by Government Code § 51104(g))?*
- d) Result in the loss of forest land or conversion of forest land to non-forest use?*
- e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of agricultural use or conversion of forest land to non-forest use?*

REGULATORY SETTING

The following environmental regulatory settings were summarized, in part, from information contained in the Tulare County General Plan 2010 Background Report.¹

Federal Regulations

There are no applicable Federal regulations.

State Regulations

California Department of Conservation - Farmland Mapping and Monitoring Program

The California Department of Conservation (*DOC*), Division of Land Resource Protection, has developed the Farmland Mapping and Monitoring Program (*FMMP*), which monitors the conversion of the state's farmland to and from agricultural use. Data is collected at the county level to produce a series of maps identifying eight land use classifications. The *DOC* program also produces a biannual report on the amount of land converted from agricultural to non-agricultural use. It maintains an inventory of state agricultural land and updates the "Important Farmland Series Maps" every two years.²

Agricultural land is rated according to several variables including soil quality and irrigation status with Prime Farmland being considered optimal for agricultural production. The *FMMP* is only an informational service and does not constitute state regulation of local land use decisions.

County Regulations

Since 2003, the County of Tulare *ACFP* has regulated dairy/bovine animal facilities' potential impact on existing citrus grove, vineyard, deciduous fruit or vegetable agriculture by establishing separation distances. The County's Ordinance Code, consistent with the *ACFP*, permits dairy/bovine facility development through a Special Use Permit process.

The California Land Conservation Act (*CLCA*) of 1965, Sections 51200 et seq. of the California Government Code, commonly referred to as the "Williamson Act", enables local governments to restrict the use of specific parcels of land to agricultural or related open space use. Landowners enter into contracts with participating cities and counties and agree to restrict their land to agriculture or open space use for a minimum of ten years. The contracts automatically renew annually unless the owner requests non-renewal or cancellation. In return, landowners receive lower property tax assessments because they are based upon farming and open space uses as opposed to speculative, development potential related, land value. Local governments historically received a reduced annual subvention of foregone property tax revenues from the State.

ENVIRONMENTAL SETTING

Important Farmland

A primary statewide concern is the conversion of Prime Farmland, Farmland of Statewide Importance and Unique Farmland to other, non-farming, uses. The California *DOC* defines important farmland as:

- ***Prime Farmland:*** *Farmland with the best combination of physical and chemical features to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.*

- *Farmland of Statewide Importance:* Similar to Prime Farmland but has minor shortcomings, such as greater slopes or a lesser ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- *Unique Farmland:* Lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

In 2014, Tulare County had about 366,400 acres of Prime Farmland, 320,900 acres of Farmland of Statewide Importance, and 11,400 acres of Farmland of Local Importance.³

Agricultural Production

The Valley floor areas (land below 600 feet above mean sea level) within Tulare County include approximately 951,000 acres of irrigated agriculture. The leading agricultural products, and their 2013 direct economic value,⁴ were:

Commodity	Value
Fruit and Nut Crops	\$4,053,422,000
Livestock and Poultry Products	\$2,005,547,000
Livestock and Poultry	\$765,047,000
Field Crops	\$715,735,000
Nursery Products	\$71,451,000
Apiary Products	\$75,381,000
Vegetable Products	\$25,758,000
Seed Crops	\$4,774,000
Total	\$7,807,115,000

During the latter half of the 1900s and the first decade of the 21st century, the dairy industry has been an increasing component of the County's agricultural environment. Concurrently, dairy industry support crops - feed corn and alfalfa - have partially supplanted other row crops, such as cotton, in the County. The dairy industry has, during the past decade, expanded to areas in the southeast County which, because of soil conditions, had limited agricultural development.

Lands under Williamson Act Contracts

As of 2012, in Tulare County there were approximately 1.7 million acres of land under Williamson Act contract.⁵

Forests

The County's forests are located solely in foothill (oak) or Sierra (conifer) areas. The proposed Program would have no impact on forest resources because its dairies and bovine facilities would be exclusively constructed and operated on the Valley floor.

IMPACTS

Impact #3.2.1 - Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance:

[Evaluation Criteria (a)]

Dairies and bovine facilities are considered an agricultural use.⁶ New dairies or bovine facilities and/or the expansion of existing dairies or bovine facilities would therefore not have an adverse impact on conversion of important farmlands to nonagricultural use.

Conclusion: Because the proposed Program would not have an adverse impact on conversion of important farmlands to nonagricultural use, this impact is *less than significant*.

Mitigation Measures: None are required.

Impact #3.2.2 - Zoning Conflicts and Williamson Act Impacts:

[Evaluation Criteria (b)]

Dairies and other bovine facilities have been permitted in the following County zoning classifications, subject to the granting of a special use permit:

- *AE (Exclusive Agricultural, 5 acre minimum parcel size [dairies only]);*
- *AE-5 (Exclusive Agricultural, 5 acre minimum parcel size);*
- *AE-10 (Exclusive Agricultural, 10 acre minimum parcel size);*
- *AE-20 (Exclusive Agricultural, 20 acre minimum parcel size);*
- *AE-40 (Exclusive Agricultural, 40 acre minimum parcel size);*
- *AE-80 (Exclusive Agricultural, 80 acre minimum parcel size); and*
- *A-1 (Agricultural, 5 acre minimum parcel size) (Note that the updated ACFP does not permit confined animal facilities in this zone).*

Dairies and bovine facilities are a permitted agricultural use under the provisions of the Williamson Act, in accord with Tulare County Uniform Rules for Agricultural Preserves, Board of Supervisors Resolution No. 89-12750.

Thus dairies and other confined-bovine facilities would not conflict with either County agricultural zoning regulations or Williamson Act contract provisions.

Conclusion: Because the proposed Program would not conflict with agricultural zoning or Williamson Act contracts, this impact is *less than significant*.

Mitigation Measures: None are required.

**Impact #3.2.3 - Impact on Timberland Production and Forest Lands:
[Evaluation Criteria (c) (d)]**

Dairies and supportive bovine facilities are confined to and permitted only in the western portion of Tulare County which is devoted to intensive agricultural uses. There are no forested lands in western Tulare County. Therefore, the development of dairies or other bovine facilities or expansion of existing dairies or bovine facilities therefore would not have any adverse impact on forest lands. (The proposed Program (the amended *ACFP*) does not apply to ranches with grazing activities.)

Conclusion: Because the proposed Program would not affect forest land or timberland, this impact is *less than significant*.

Mitigation Measures: None are required.

**Impact #3.2.4 - Conversion of Farmland or Forest Land:
[Evaluation Criteria (e)]**

Any increase in production of milk could result in the expansion of milk processing plants (milk, cheese, yogurt, ice cream, etc.) in Tulare County or in other counties within the southern portion of the San Joaquin Valley. While most milk processing plants are located adjacent to urban centers and are connected to municipal water and wastewater systems, these valley communities are also surrounded by agricultural lands. This possible indirect impact would be less than significant because it would be addressed by city or county general plan policies discouraging agricultural land conversion, and through mitigation of agricultural land conversion impacts through the *CEQA* and permitting processes. There would be no indirect effects of the proposed Program that would adversely affect forest land.

Conclusion: Based on the above analysis, indirect impacts of the proposed Program on conversion of farmland or forest land are *less than significant*.

Mitigation Measures: None are required.

REFERENCES

¹ County of Tulare. 2010. General Plan Background Report. <http://generalplan.co.tulare.ca.us>

² California Department of Conservation. 2014. Farmland Mapping & Monitoring Program. Available online: <http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx>, accessed December 5, 2015.

³ <http://www.conservation.ca.gov/dlrp/fmmp/Pages/Tulare.aspx>, accessed December 5, 2015.

⁴ County of Tulare. 2013. Agricultural Crop and Livestock Report. Tulare County Agricultural Commissioner. Pages 2-9. [http://agcomm.co.tulare.ca.us/default/index/cfm/standards-and-quarantine/crop-reports1/crop-reports-2011-2020/2013-crop-report-pdf-](http://agcomm.co.tulare.ca.us/default/index/cfm/standards-and-quarantine/crop-reports1/crop-reports-2011-2020/2013-crop-report-pdf-5)

⁵ http://www.conservation.ca.gov/dlrp/lca/stats_reports/Documents/2014%20LCA%20Status%20Report_March_2015.pdf.

Accessed January 12, 2016

⁶ County of Tulare. 1989. Tulare County Uniform Rules for Agricultural Preserves. Board of Supervisors Resolution No. 89-1275. Tulare County, CA.

3.3 Air Quality

INTRODUCTION

This section describes the impacts of the proposed Program on local and regional air quality. The regulatory setting provides a description of applicable federal, state and local regulatory requirements. The environmental setting provides a description of air quality conditions in the County and the San Joaquin Valley Air Basin. Program-related emissions and health effects are identified together with mitigation measures which would reduce identified significant impacts.

IMPACT EVALUATION CRITERIA

State CEQA Guidelines criteria for evaluating adverse impacts on air quality used for this impact analysis are:

Would the project:

- a) Conflict with or obstruct implementation of the applicable air quality plan?*
- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?*
- c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*
- d) Expose sensitive receptors to substantial pollutant concentrations?*
- e) Create objectionable odors affecting a substantial number of people?*

REGULATORY SETTING

Air quality is regulated by several agencies including the Environmental Protection Agency (*EPA*), the California Air Resources Board (*CARB*), and the San Joaquin Valley Air Pollution Control District (*SJVAPCD*). Each of these agencies develops rules and/or regulations to attain the goals or directives imposed upon them through legislation. Both State and local regulations may be more stringent than *EPA* regulations. In general, air quality evaluations are based upon air quality standards developed by the federal government and several State agencies. Emissions limitations are then imposed upon individual sources of air pollutants by local agencies, such as the *SJVAPCD*. Mobile sources of air pollutants are largely controlled through federal and State agencies, while most stationary sources are regulated by the *SJVAPCD*.

The following environmental and regulatory settings were summarized, in part, from information contained in the Tulare County General Plan 2010 Background Report.¹

Federal Regulation - Environmental Protection Agency

The Environmental Protection Agency (*EPA*) is responsible for implementing programs established under the Federal Clean Air Act (*CAA*), such as establishing and reviewing the National Ambient Air Quality Standards (*NAAQS*) and judging the adequacy of State Implementation Plans (*SIPs*). The *EPA* may also delegate authority to implement some federal programs to the states, while retaining oversight authority to ensure that the programs are properly implemented.

The *EPA* has established *NAAQS* which apply to all areas throughout the nation. In most cases, *NAAQS* define the maximum acceptable concentration that may be reached.

State Regulation - California Air Resources Board

The California Air Resources Board (*CARB*) is responsible for enforcing the federally required *SIPs* in an effort to achieve and maintain the national ambient air quality standards. *SIPs* are prepared by states, describing how each federal nonattainment area will attain and maintain national ambient standards, and submitted to the *EPA*. *SIPs* include the technical foundation for understanding air quality (e.g. emission inventories and air quality monitoring), control measures, strategies and enforcement mechanisms, and the individual nonattainment plans for air quality districts. *CARB* is responsible for determining air basin attainment designations in California.

California has adopted more stringent ambient air quality standards (California Ambient Air Quality Standards, *CAAQS*) for most of the criteria air pollutants. California has also set standards for sulfates, *H₂S*, vinyl chloride, and visibility-reducing particles. *CARB* acts as an oversight agency for activities conducted by air quality management districts, which are organized at the county or regional level. *CARB* is also responsible for the following types of activities:

Mobile Sources: Establishing tailpipe standards and regulating emissions from mobile sources.

Regulating Toxic Air Contaminants (*TAC*): Identifying toxic air contaminants and overseeing requirements imposed by the Air Toxics Hot Spot Assessment Act of 1988 (*AB2588*).

Federal and State Regulations - Ambient Air Quality Standards

Both the federal government (*EPA*) and the State of California (*CARB*) have established health-based ambient air quality standards (*AAQS*) for six air pollutants, commonly referred to as “criteria pollutants”. These pollutants are called “criteria” pollutants because standards have been established for each of them to meet to protect the public health (primary standards) and welfare (secondary standards).

The *EPA* has established *NAAQS* which apply to all areas throughout the Nation. In most cases, *NAAQS* define the maximum acceptable concentrations that may be reached more than once per year. These are maximum levels of contaminants, which are intended to represent safe levels that avoid specific adverse health effects associated with each pollutant. They cover what are

called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. The air quality pollutants under state and federal law include ozone, *CO*, nitrogen dioxide (*NO*₂), sulfur dioxide (*SO*₂), *PM*₁₀, fine particulate matter (*PM*_{2.5}), lead, and *H*₂*S*.

The federal and state *AAQS* are summarized in Table 3.3-1. The federal and state standards were developed independently with differing purposes and methods, although both processes are intended to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and *PM*₁₀.

Regional Regulations – San Joaquin Valley Air Pollution Control District

Air pollution transcends political boundaries; therefore, many air quality problems are best managed on a regional basis. This was the case for the San Joaquin Valley where, until 1991, each county operated a local Air Pollution Control District (*APCD*). The State Legislature then determined that management of the entire air basin by a single agency would be more effective. Air basins are geographic areas sharing a common “air-shed”. Most major metropolitan areas in California now fall under Unified Air Pollution Control Districts (*UAPCDs*), or Air Quality Management District’s (*AQMDs*).

The San Joaquin Valley Air Pollution Control District (*SJVAPCD*) maintains air quality conditions in Tulare County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the *SJVAPCD* includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The *SJVAPCD* also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations.

Federal and state air quality laws require identification of areas not meeting the *AAQS*. These areas must develop regional air quality plans to eventually attain the standards. Under both the federal and state Clean Air Acts, the San Joaquin Valley Air Basin is a non-attainment area (standards have not been attained) for ozone, and *PM*_{2.5}. The Air Basin is either attainment or unclassified for other ambient standards.

The Guidance for Assessing and Mitigating Air Quality Impacts² (*GAMAQI*) is an advisory document that provides lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. Local jurisdictions are not required to use the methodology outlined therein. The *GAMAQI* describes the criteria that the *SJVAPCD* uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for determining whether projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts. The *GAMAQI* includes guidance for analysis for criteria pollutants, particulates, and odors for both construction and operations of a project.

**Table 3.3-1
Federal and State Ambient Air Quality Standards – 2015**

Pollutant	Averaging Time	California Standards ^a		National Standards ^b		
		Concentration ^c	Method	Primary ^c	Secondary ^{c,d}	Method
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m ³)		0.070 ppm (137 µg/m ³)		
Respirable Particulate Matter (PM ₁₀)	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		–		
Fine Particulate Matter (PM _{2.5})	24 Hour	–	–	35 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	12.0 µg/m ³		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m ³)	–	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m ³)		9 ppm (10 mg/m ³)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)		–	–	
Nitrogen Dioxide (NO ₂)	1 Hour	0.18 ppm (339 µg/m ³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m ³)	–	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)		0.053 ppm (100 µg/m ³)	Same as Primary Standard	
Sulfur Dioxide (SO ₂)	1 Hour	0.25 ppm (655 µg/m ³)	Ultraviolet Fluorescence	75 ppb (196 µg/m ³)	–	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	–		–	0.5 ppm (1300 µg/m ³)	
	24 Hour	0.04 ppm (105 µg/m ³)		0.14 ppm (for certain areas)	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)	–	
Lead	30 Day Average	1.5 µg/m ³	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m ³ (for certain areas) ^e	Same as Primary Standard	
	Rolling 3-Month Average	–		0.15 µg/m ³		
Visibility Reducing Particles	8 Hour	See footnote f	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m ³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence			
Vinyl Chloride ^e	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography			

- California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM₁₀, PM_{2.5}, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
- National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
- Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

- d. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- e. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
- f. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard ($1.5 \mu\text{g}/\text{m}^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

All projects are subject to *SJVAPCD* rules and regulations in effect at the time of construction. During construction, projects must comply with dust suppression requirements.

The *SJVAPCD* is responsible for establishing and enforcing local air quality rules and regulations that address requirements of federal and state air pollution laws. The proposed Program will include equipment and activities subject to the following rules and regulations:

Rule 2010

This rule requires that an Authority to Construct (ATC) permit (a new source review permit) and a Permit to Operate (PTO) be obtained prior to constructing, altering, replacing or operating any device which emits or may emit air contaminants.

Rule 2020

This rule specifies criteria that emission units must meet in order to be exempt from District permit requirements. The rule also specifies the recordkeeping requirements to verify the exemption and outlines the compliance schedule for emission units that lose the exemption after installation. This rule applies to any source that emits or may emit air contaminants.

Rule 2070

This rule sets forth the standards that must be met in order for a permit to be issued by the SJVAPCD. The rule applies to any activity required to obtain a permit according to Rule 2010.

Rule 2201

The purpose of Rule 2201 is to provide for the review of new and modified stationary sources of air pollution and to provide mechanisms including emission trade-offs by which ATC sources may be granted without interfering with the attainment or maintenance of AAQS. The SJVAPCD's new source review rule (NSR) applies to all new stationary sources and all modifications to existing stationary sources which are subject to District permit requirements. The rule generally requires that new or modified equipment include Best Available Control Technology (BACT) and any emission increase above specified thresholds be offset.

Rule 3190

The purpose of this rule is to recover the District's costs for the review and management of Conservation Management Practices (CMP) Applications and Plans required by Rule 4550.

Rule 4101

This rule prohibits the emissions of visible air contaminants to the atmosphere. The rule applies to any source operation which emits or may emit air contaminants.

Rule 4102

The rule applies to any source operation which emits or may emit air contaminants or other materials. It prohibits the discharge from any source whatsoever of emissions of air contaminants or other materials 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 person or the public; or which cause or have a natural tendency to cause injury or damage to business or property. The provisions of this rule do not apply to odors emanating from agricultural operations in the growing of crops or raising of fowl or animals.

Rule 4201

This rule establishes a particulate matter emission standard. It applies to any source operation which emits or may emit dust, fumes, or total suspended particulate matter. The rule prohibits the release or discharge into the atmosphere from any single source operation of dust, fumes, or total suspended particulate matter emissions in excess of 0.1 grain per cubic foot of gas at dry standard conditions.

Rule 4311

The purpose of this rule is to limit the emissions of VOC and NO_x from the operation of flares. This rule sets forth design, operational and test requirements for flares.

Note: This rule would be applicable if digesters are required and excess biogas is flared.

Rule 4550

The purpose of this rule is to limit fugitive dust emissions from agricultural operation sites. It applies to agricultural operation sites located within the San Joaquin Valley Air Basin (Air Basin).

Rule 4565

The provisions of this rule apply to all facilities whose throughput consists entirely or in part of biosolids, animal manure, or poultry litter and to an operator who landfills; land applies, composts, or co-composts these materials.

Note: Facilities subject to Rule 4570 or facilities that are specifically exempt under Rule 4570 are exempt from Rule 4565.

Rule 4570

The purpose of this rule is to limit emissions of VOC from Confined Animal Facilities (CAF). Details are described later in this section.

Rule 4623

The purpose of this rule is to limit emissions of VOC from the storage of organic liquids.

Rule 4641

This rule applies to the manufacture and use for paving and maintenance operations of cutback asphalt, slow cure asphalt and emulsified asphalt.

Regulation VIII (Fugitive PM₁₀ Prohibitions)

The purpose of Regulation VIII (Fugitive PM₁₀ Prohibitions) is to reduce ambient concentrations of fine particulate matter (PM₁₀) by requiring actions to prevent, reduce or mitigate anthropogenic fugitive dust emissions. Regulation VIII consists of eight rules to reduce, to the extent practicable, fugitive dust sources.

Rule 8011

The purpose of this rule is to reduce ambient concentrations of PM₁₀ by requiring actions to prevent, reduce or mitigate fugitive dust emissions. The rules contained in Regulation VIII have been developed pursuant to United States EPA guidance for serious PM₁₀ nonattainment areas. The rules are applicable to specified anthropogenic fugitive dust sources.

Rule 8021

This rule limits fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities. This rule applies to any such activity and other earthmoving activities, including, but not limited to, land clearing, grubbing, scraping, travel on site, and travel on access roads to and from the site. Prior to the start of construction activities at a dairy facilities site, the owner/operator will be required to file a Dust Control Plan with the SJVAPCD in accordance with Section 6.3 of Rule 8021.

Rule 8031

This rule applies to the outdoor handling, storage, and transport of any bulk material.

Rule 8041

This rule limits fugitive dust emissions from carryout and trackout. The rule applies to all sites that are subject to any of the following rules where carryout or trackout has occurred, or may occur on paved public roads or the paved shoulders of a paved public road: Rules 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities), 8031 (Bulk Materials), 8061 (Paved and Unpaved Roads), and 8071 (Unpaved Vehicle and Equipment Traffic Areas).

Rule 8051

The purpose of this rule is to limit fugitive dust emissions from open areas. It applies to any open area having 0.5 acres or more within urban areas, or 3.0 acres or more within rural areas, and containing at least 1,000 square feet of disturbed surface area.

Rule 8061

This rule limits fugitive dust emissions from paved and unpaved roads by implementing control measures and design criteria. It applies to any new or existing public or private paved or unpaved road, road construction project, or road modification project.

Rule 8071

The purpose of this rule is to limit fugitive dust emissions from unpaved vehicle and equipment traffic areas. It applies to any unpaved vehicle/equipment traffic area.

Rule 8081

The purpose of this rule is to limit fugitive dust emissions from agricultural sources. It applies to off-field agricultural sources.

Permitting of Agriculture Operations

The 1990 Federal Clean Air Act Amendment (CAAA) includes a Title V federal permitting program for “major” sources of emissions. In the San Joaquin Valley, under *SJVAPCD* Rule 2520, this includes any facility with more than 10 tons per year of ozone precursors (*NOx* or *VOC*). Dairy and other bovine facility sources that may require Title V permits include facilities with stationary diesel engines and concentrated animal feeding operations. Applicability of the Title V permit program depends on where sources are located, and the air quality rating of that area. *EPA* has not as yet established, other than Title V regulations, air quality requirements for dairies.

Under state law (*SB 700* of 2003), new and modified dairies with the potential to emit half of the major source threshold (12.5 tons of criteria pollutants) or more annually are required to obtain authorities to construct and permits to operate from an *APCD*. New and modified stationary sources are required by *SJVAPCD* Rule 2201 to mitigate their emissions using *BACT*, and to offset emissions when above the applicable thresholds. The *SJVAPCD* has established dairy *VOC* emissions factors to help determine which operations require permitting, and help establish *BACT* for new and expanding dairies.³

The *SJVAPCD* has adopted Rule 4570⁴ adopted to limit emissions from dairies and other confined animal facilities. It requires owners/operators to submit a facility emission inventory and emission mitigation plan as part of the permit application for an authority to construct or permit to operate. Rule 4570 lists mitigation measures to be chosen for the mitigation plan, based on the type and size of the facility.

District Rule 4570 includes various options and management practices that can be used to achieve the required emission reductions from different sources at confined animal facilities, such as feed storage and handling, animal housing, manure handling and storage, and lagoons.

The District in 2010 amended Rule 4570 to achieve further reductions from existing confined animal facilities in order to attain compliance with applicable health-based ambient air quality standards. The amendments resulted in lowering the applicable thresholds and requiring Phase II mitigation measures. The Phase II mitigation measures include additional practices to reduce *VOC* emissions from feed storage at dairies, which are now known to be a significant source of *VOC* emissions. Implementation of the Phase II mitigation measures of District Rule 4570 is expected to result in significant reductions of smog-forming *VOCs* in the San Joaquin Valley in addition to the *VOC* reductions that were already achieved by the implementation of Phase I of District Rule 4570.⁴ (Copies of Rule 4550 and 4570 are in Appendix D.)

Based on the District's current emission factors and control efficiencies, it is estimated that District Rule 4570 (Phase 1 & 2) has resulted in an overall *VOC* reduction from dairies of more than 30% and has resulted in more than 36 tons per day of *VOC* reductions (based on the 2011 Emission Inventory).⁵

The *SJVAPCD*'s goal is to perform annual inspections of all dairy facilities within its eight-county jurisdiction, including Tulare County. Inspections include verifying compliance with all permit requirements and conservation management practices. Over the last three years (2012-2015) in Tulare County, the *SJVAPCD* has issued 49 Notices of Violation (*NOVs*) to dairies and 14 Notices to Comply. These violations range from procedural violations, such as not maintaining records in accordance with permit conditions, to emissions violations for continued operation of non-compliant engines.⁶

SJVAPCD CEQA Significance Thresholds

For the purposes of *CEQA* evaluation, the *SJVAPCD*'s has established the significance thresholds shown in Tables 3.3-2 and 3.3-3.

**Table 3.3-2
San Joaquin Valley Air Pollution Control District
Air Quality Thresholds of Significance – Criteria Pollutants⁷**

Pollutant/Precursor	Construction Emissions	Operational Emissions	
	Emissions (tpy)	Permitted Equipment and Activities Emissions (tpy)	Non-Permitted Equipment and Activities Emissions (tpy)
CO	100	100	100
NOx	10	10	10
ROG	10	10	10
SOx	27	27	27
PM ₁₀	15	15	15
PM _{2.5}	15	15	15

**Table 3.3-3
San Joaquin Valley Air Pollution Control District
Air Quality Thresholds of Significance – Toxic Air Contaminants⁸**

Carcinogens	Maximally Exposed Individual risk equals or exceeds 20 in one million
Non-Carcinogens	Acute: Hazard Index equals or exceeds 1 for the Maximally Exposed Individual Chronic: Hazard Index equals or exceeds 1 for the Maximally Exposed Individual

Regional Regulation – Tulare County

The existing *ACFP* and the proposed amended *ACFP* include siting criteria for new and expanded airy and other bovine facilities designed in part to reduce off-site air quality and odor impacts. In addition, the Tulare County General Plan Air Quality Element¹ includes numerous policies designed to protect air quality.

ENVIRONMENTAL SETTING

Air Pollution Climatology

The proposed Program is located in the San Joaquin Valley Air Basin, a continuous intermountain air basin. On the east is the Sierra Nevada Range; the Coast Range forms the western boundary; the Tehachapi Mountains form the southern boundary. The Air Basin is comprised of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare Counties and the Sierra ridge west through Valley portion of Kern County; approximately 25,000 square miles (see Figure 3.3-1). Tulare County falls within the southern portion of the Air Basin, which is bordered on the east by the Sierra Nevada range, on the west by the Coast Ranges, and on the south by the Tehachapi Mountains. These features restrict air movement through and out of the Air Basin.

The topography of Tulare County significantly varies in elevation from its eastern to western borders, which results in large climatic variations that ultimately affect air quality. The western portion of the County is within the low-lying areas of the Air Basin. This portion of the county is much dryer in comparison to the eastern portion that is located on the slopes of the Sierra

Nevada Mountains. The higher elevation contributes to both increased precipitation and a cooler climate. Wind direction and velocity in the eastern section varies significantly from the western portion of the County. The western side receives northwesterly winds. The eastern side of the County exhibits more variable wind patterns, but the wind direction is typically up-slope during the day and downslope in the evening. Generally, the wind direction in the eastern portion of the county is westerly; however terrain differences can create moderate directional changes.

The Air Basin is highly susceptible to pollutant accumulation over time, partially due to the transport of pollutants into the Air Basin from upwind sources. Stationary emission sources in the County include the use of cleaning and surface coatings and industrial processes, road dust, local burning, construction/demolition activities, and fuel combustion. Mobile emissions are primarily generated from the operation of vehicles.

Existing Emission Sources

Unlike other air basins in California, the pollution of the Air Basin is not exclusively produced in large urban areas. Instead emissions are generated from many moderate sized communities. Emission levels in the San Joaquin Valley have generally been decreasing overall since 1990. This can be primarily attributed to motor vehicle emission controls.

The main source of *CO* and *NO_x* emissions is motor vehicles. The largest contributor to volatile organic compounds (*VOC*) emissions is the oil and gas production area located in the southern part of the Air Basin, which includes Tulare County. *VOC* emissions from vehicles have been decreasing since 1985 due to stricter standards even though vehicle miles have been increasing. Direct *PM₁₀* emissions decreased between the years 1975 and 1995 and have remained relatively constant since 2000. Vehicles traveling on unpaved roads and agricultural activities are a substantial source of *PM₁₀* emissions in the Air Basin.

Air Quality Monitoring and Existing Emission Levels

Geographic areas and air basins are classified for each pollutant as either attainment or nonattainment. In general, "non-attainment" means that the applicable standard has been exceeded anywhere within the air basin. There are several ambient air monitoring stations in Tulare County, three of which are located in mountainous areas at Sequoia National Park: Lower Kaweah (measures ozone); Sequoia and Kings Canyon National Park (measures ozone); and Lookout Point at Sequoia National Park (measures ozone). The air monitoring station located in a low-lying area of the County is in Visalia (North Church Street - measures ozone, *PM₁₀*, *PM_{2.5}*, and *CO*). Air quality monitoring data at the Visalia station is provided in Table 3.3-4.

Air Basin Attainment Status

The federal nonattainment designation is subdivided into five categories (listed in order of increasing severity): marginal, moderate, serious, severe, and extreme. The degree of an area's nonattainment status reflects the extent of the pollution and the expected time period required to achieve attainment.

**Table 3.3-4
Air Quality Data Summary (2009-2013) for the Program Area⁹**

Pollutant	2009	2010	2011	2012	2013
Ozone					
Highest 1-hour average (ppm)	0.120	0.122	0.119	0.111	0.095
Days above State 1-hour standard	23	15	4	9	1
Highest 8-hour average (ppm)	0.085	0.104	0.084	0.094	0.084
Days above State 8-hour standard	68	57	33	60	10
Days above Federal 8-hour standard	48	34	17	37	0
Particulate Matter less than 10 microns (PM₁₀)					
Highest 24-hour average (ug/m ³)	93	90.8	78.1	75.7	160
Estimated Days above State standard	121	59.4	68.8	89.3	94
Estimated Days above Federal standard	0	0	0	0	0
Annual Average (ug/m ³)	41.8	34.0	34.0	38.1	44.5
Particulate Matter less than 2.5 microns (PM_{2.5})					
Highest 24-hour average (ug/m ³)	63.5	61.6	73.2	76.2	124.2
Estimated Days above Federal Standard	4	3	9	7	8
Annual Average (ug/m ³)	16.0	13.5	16.0	14.7	18.9

Designated nonattainment areas are generally subject to more stringent review by *CARB* and *EPA*. In the endeavor to improve air quality to achieve the standards, projects and programs are subject to more stringent pollution control strategies and requirements for mitigation measures (such as mobile source reduction measures). If the *NAAQS* are not achieved within the specified timeframe, federal highway funding penalties (and a federally administered implementation plan incorporating potentially harsh measures to achieve the *NAAQS*) will result. In summary, the attainment status of Air Basin is presented in Table 3.3-5.

**Table 3.3-5
SJVAPCD Attainment Status**

Pollutant	Destination/Classification	
	Federal Standards	State Standards
Ozone - one hour	No Federal Standard ¹	Nonattainment/Severe
Ozone - eight hour	Nonattainment/Extreme ²	Nonattainment ²
PM ₁₀	Attainment ³	Nonattainment
PM _{2.5}	Nonattainment ⁴	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Vinyl Chloride	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

1. Effective June 15, 2005, the U.S. *EPA* revoked the federal 1-hour ozone standard, including associated designations and classifications. However, *EPA* had previously classified the *SJVAB* as extreme nonattainment for this standard. Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the *SJVAB*.
2. Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, *EPA* approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).
3. On September 25, 2008, *EPA* redesignated the San Joaquin Valley as attainment for the *PM₁₀* *NAAQS* and approved the *PM₁₀* Maintenance Plan.
4. The Valley is designated nonattainment for the 1997 *PM_{2.5}* *NAAQS*. *EPA* designated the Valley as nonattainment for the 2006 *PM_{2.5}* *NAAQS* on November 13, 2009 (effective December 14, 2009).

At the federal level, the *SJVAPCD* is designated as nonattainment for the 8-hour ozone standard, attainment for PM_{10} and CO , and nonattainment for $PM_{2.5}$. At the state level, the District is designated as nonattainment for the 1-hour and 8-hour ozone, PM_{10} , and $PM_{2.5}$ standards.

Air Quality Plans

The *SJVAPCD* has developed plans to attain state and federal standards for ozone and particulate matter. The air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control methods have worked, and to show how air pollution will be reduced. The *SJVAPCD* descriptions of these plans are as follows.¹⁰

1-Hour Ozone. Although *EPA* revoked its 1979 1-hour ozone standard in June 2005, many planning requirements remain in place, and the Valley must still attain this standard before it can rescind *CAA* Section 185 fees (\$12 per vehicle). The District's most recent 1-hour ozone plan, the 2013 Plan for the Revoked 1-hour Ozone Standard,¹¹ demonstrated attainment of the 1-hour ozone standard by 2017. However, the District is in the process of requesting an *EPA* finding of attainment based on 2011-2013 ozone data. The District will continue working closely with *ARB* and *EPA* on this issue.

8-Hour Ozone. The District's far-reaching 2007 Ozone Plan¹² demonstrates attainment of *EPA*'s 1997 8-hour ozone standard by 2023. *EPA* approved the 2007 Ozone Plan effective April 30, 2012. The District is now in the process of developing the 2016 Ozone Plan to address *EPA*'s updated 8-hour ozone standard.

PM_{10} . Based on PM_{10} measurements from 2003-2006, *EPA* found that the *SJVAB* has reached federal PM_{10} standards. On September 21, 2007, the *SJVAPCD*'s Governing Board adopted the 2007 PM_{10} Maintenance Plan and Request for Redesignation.¹³ This plan demonstrates that the Valley will continue to meet the PM_{10} standard. *EPA* approved the document and on September 25, 2008, the *SJVAB* was redesignated to attainment/maintenance.

$PM_{2.5}$. The *SJVAPCD*'s 2008 $PM_{2.5}$ Plan¹⁴ demonstrated 2014 attainment of *EPA*'s first $PM_{2.5}$ standard, set in 1997. *EPA* lowered the $PM_{2.5}$ standard in 2006, and the District's 2012 $PM_{2.5}$ Plan showed attainment of this standard by 2019, with the majority of the Valley seeing attainment much sooner. The *SJVAPCD* continues to work with *EPA* on issues surrounding these plans, including *EPA* implementation updates. *EPA* lowered the $PM_{2.5}$ standard again in 2012 and is in the process of completing attainment designations.

HEALTH EFFECTS OF AIR POLLUTANTS

Criteria Pollutants

The general characteristics and health effects of air pollutants associated with proposed Program implementation summarized below.¹⁵

Ozone (O_3): Ozone is found in two regions of the Earth's atmosphere – at ground level and in the upper regions of the atmosphere. Both types of ozone have the same chemical composition (O_3). While upper atmospheric ozone protects the Earth from the sun's harmful

rays, ground level ozone is the main component of smog. Ground level ozone, is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NO_x) and volatile organic compounds (VOC). Ozone is likely to reach unhealthy levels on hot sunny days in urban environments. Ozone can also be transported long distances by wind. For this reason, even rural areas can experience high ozone levels. Ozone contributes to what we typically experience as “smog” or haze, which still occurs most frequently in the summertime, but can occur throughout the year in some southern and mountain regions. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors and chemical solvents are some of the major sources of NO_x and VOC .

Health Effects: Ozone in the air we breathe can harm our health – typically on hot, sunny days when ozone can reach unhealthy levels. Even relatively low levels of ozone can cause health effects. Children, people with lung disease, older adults, and people who are active outdoors, including outdoor workers, may be particularly sensitive to ozone. Children are at great risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure. Children are also more likely than adults to have asthma. Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground level ozone also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. These effects may lead to increased school absences, medication use, visits to doctors and emergency rooms, and hospital admissions. Research also indicates that ozone exposure may increase the risk of premature death from heart or lung disease.

Respirable Particulate Matter (PM_{10}): Particulate matter is released directly into the atmosphere by stationary and mobile sources. PM_{10} consists of a wide range of solid and liquid particles, including smoke, dust, aerosols, and metallic oxides. Most primary PM_{10} emissions are generated from human activity. These types of activities include agricultural operations (including dairies and bovine facilities), industrial processes, combustion of wood and fossil fuels, construction and demolition activities, and entrainment of road dust into the air. Natural sources, such as windblown dust and wildfires, also contribute to the overall PM_{10} emissions.¹⁶

Health Effects: PM_{10} is inhaled into and lodges in the deepest parts of the lung evading the respiratory system’s natural defenses. In high concentrations, effects on humans include aggravation of chronic disease and heart/lung disease symptoms. Non-health effects include reduced visibility and soiling of surfaces.

Epidemiologic studies have contributed to understanding the size specificity of health effects, and have increasingly implicated the gases and smaller particles as the more relevant components of hazardous particulate exposure.

Fine Particulate Matter ($PM_{2.5}$): $PM_{2.5}$ is also released directly into the atmosphere by stationary and mobile sources. It is also created in the atmosphere by photochemical and chemical processes acting on precursor pollutants. Sources of $PM_{2.5}$, the fine fraction of PM_{10} , include vehicles, power generation, industrial processes, NH_3 and wood burning.

In 2005, the CARB prepared a technical report, “Characterization of Ambient PM_{10} and $PM_{2.5}$ in California” to characterize the chemical composition of PM_{10} and $PM_{2.5}$.¹⁷ On an annual average basis throughout the San Joaquin Valley, organic carbon is the major component of $PM_{2.5}$ (approximately 46 percent). Ammonium nitrate and ammonium sulfate also contribute significantly to ambient $PM_{2.5}$ (approximately 45 percent); with ammonium nitrate contributing three times as much as ammonium sulfate. Dust from roads and other dust producing activities, and elemental carbon from combustion processes contribute to a lesser extent. The chemical composition of $PM_{2.5}$ varies in urban and rural areas of the San Joaquin Valley. On peak days secondary ammonium nitrate becomes the largest contributor to ambient $PM_{2.5}$ at both urban and rural sites (approximately 50 to 60 percent), with a higher percent contribution at rural sites. Organic carbon constitutes approximately one third of $PM_{2.5}$ at urban sites, but only 14 percent at rural sites. Elemental carbon resulting from mobile and stationary combustion processes, and ammonium sulfate, also contribute to $PM_{2.5}$, but to a lesser extent.

Real-Time Air Advisory Network (RAAN) was developed in 2010 through a partnership between the SJVAPCD, UCFS-Fresno, and the American Lung Association in Central California. By combining local air quality information together with health recommendations RAAN allows schools, parents, and others to make informed decisions when outdoor activities should be limited. This is accomplished by:

- To quickly inform users via automated email or text whenever local ozone or fine particulate matter ($PM_{2.5}$) concentrations threaten health;
- Using the latest health science, establish practical guidelines for when and how to limit outdoor exercise based on current hourly air quality levels; and
- To provide schools and the general public with direct, 24/7 web access to the Valley’s network of air quality monitors at www.valleyair.org.

Health Effects: $PM_{2.5}$ health effects are similar to those of PM_{10} ; they can impair proper lung function and may contribute to the development of chronic bronchitis. They are a health concern because they easily reach the deepest recesses of the lungs. Scientific studies have linked particulate matter (alone or in combination with other air pollutants) with a series of health problems, including premature death, respiratory related hospital admissions or emergency room visits, aggravated asthma, chronic bronchitis, decrease in lung functions, and work and school absences. Those who are most at risk are the elderly, individuals with preexisting heart and lung disease, children, and persons with asthma.

Carbon Monoxide (CO): Unlike ozone, CO is released directly into the atmosphere by stationary and mobile sources and typically found at high concentrations near the source of emission release. CO is an odorless, colorless gas formed by the incomplete combustion of fuels. CO from dairy and other bovine facility operation is typically generated by operation of trucks, mobile equipment, and automobiles.¹⁸

CO concentrations are seasonal, with the highest concentrations occurring in the winter. Concentrations typically are highest during stagnant air periods within the period November through January.

Health Effects: *CO* health effects are related to its affinity for hemoglobin in the blood. At high concentrations, *CO* reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity and impaired mental abilities.

Nitrogen Oxides (*NO_x*, includes *NO₂*): Nitrogen oxides, or *NO_x*, is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. However, one common pollutant, nitrogen dioxide (*NO₂*) along with particles in the air can often be seen as a reddish-brown layer over many urban areas. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process. The primary sources of *NO_x* are motor vehicles (49%), electric utilities (27%), and other industrial, commercial, and residential sources that burn fuels (24%).

Health Effects: *NO_x* is one of the main ingredients involved in the formation of ground-level ozone, which can trigger serious respiratory problems. It reacts to form nitrate particles, acid aerosols, as well as *NO₂*, which also cause respiratory problems. It contributes to formation of acid rain, and contributes to nutrient overload that deteriorates water quality. *NO_x* contributes to atmospheric particles that cause visibility impairment most noticeable in national parks. It reacts to form toxic chemicals contributes to global warming.

NO_x and the pollutants formed from *NO_x* can be transported over long distances following the pattern of prevailing winds in the U.S. This means that problems associated with *NO_x* are not confined to areas where *NO_x* are emitted. Therefore, controlling *NO_x* is often most effective if done from a regional perspective, rather than focusing on sources in one local area.

Since 1970, *EPA* has tracked emissions of the six principal air pollutants – carbon monoxide, lead, nitrogen oxides, particulate matter, sulfur dioxide, and volatile organic compounds. Emissions of all of these pollutants have decreased significantly except for *NO_x* which has increased approximately ten percent over this period.¹⁹

Lead (*Pb*): Lead is a relatively soft and chemically resistant metal. Lead forms compounds with both organic and inorganic substances. As an air pollutant, lead is present in small particles. Sources of lead emissions in California include a variety of industrial activities. Because it was emitted in large amounts from vehicles when leaded gasoline was used, lead is present in many soils (especially urban soils) and can get resuspended into the air.

Health Effects: Because lead is only slowly excreted, exposures to small amounts of lead from a variety of sources can accumulate to harmful levels. Effects from inhalation of lead near the level of the ambient air quality standard include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms can include fatigue, anxiety, short-term memory loss,

depression, weakness in the extremities, and learning disabilities in children. Lead also causes cancer.²⁰

Hydrogen Sulfide, (H_2S): Hydrogen sulfide (H_2S) is a naturally occurring, colorless gas with a foul smell like rotten eggs. It is often produced when sulfurous compounds in organic matter, such as manure are decomposed by bacteria in anaerobic (without oxygen) conditions. It also occurs in natural gas, groundwater, and volcanic gases. Common anthropogenic sources of hydrogen sulfide include sour crude oil refineries, pulp and paper mills, oil and gas operations, sewage treatment plants, and animal agriculture. In general, hydrogen sulfide emissions from concentrated animal feeding operations (CAFOs) come from two sources. The first source is treatment lagoons or runoff retention structures. Anaerobic decomposition of manure in these structures produces hydrogen sulfide gas. The second source is surfaces where manure accumulates, such as in pens, alleys, or manure storage areas. Extended anaerobic conditions on these surfaces, which are normally associated with standing water or wet manure, can generate this gas over large areas.

Health Effects: Hydrogen sulfide is highly toxic at elevated concentrations. Exposure can occur by inhalation of contaminated air or ingestion of contaminated water. Breathing air with high levels of hydrogen sulfide may cause immediate death, and exposure to low levels over a long period can cause headaches, fatigue, and eye irritation. Hydrogen sulfide is heavier than air and may accumulate in enclosed or low-lying areas.

Some officials are concerned that hydrogen sulfide concentrations downwind of feedyards may exceed regulatory or public-health limits. However, a recent literature review and field monitoring near and within cattle feedyards concluded that concentrations measured downwind of concentrated animal feeding operations are usually very low. Hydrogen sulfide can be emitted at very low rates by open-lot beef cattle feeding facilities (feedyards) in gaseous form from pen surfaces and runoff retention structures. The main threat of hydrogen sulfide arises in enclosed housing structures or below-grade, enclosed manure-storage pits, features not generally found on beef feedyards.²¹

Sulfur Dioxide (SO_2): Sulfur dioxide is a gas released by both human and natural sources. It is a colorless gas with a pungent, irritating odor and taste. Sulfur dioxide is used in many industrial processes such as chemical preparation, refining, pulp-making and solvent extraction. In addition, it is used in the preparation and preservation of food due to its ability to prevent bacterial growth and browning of fruit. Burning of fossil fuels such as coal, oil and natural gas are the main source of sulfur dioxide emissions. Coal fired power stations, in particular, are major sources of sulfur dioxide, with coal burning accounting for 50 percent of annual emissions, as explained by the Tropospheric Emission Monitoring Internet Service (TEMIS). Moreover, oil burning accounts for a further 25-30 percent. The U.S. Environmental Protection Agency (EPA) illustrates how sulfur dioxide emissions are released primarily as a result of generated electricity through fossil fuel burning power stations. Additional smaller sources of sulfur dioxide are released from industrial processes states the U.S. EPA. These include extracting metal from ore and the burning of fuels with a high sulfur content by locomotives, large ships and non-road equipment. Volcanic eruptions release large quantities of sulfur dioxide into the air. The vast quantities of sulfur dioxide

released during one eruption can be enough to alter the global climate, according to National Geographic. Similarly, hot springs release sulfur dioxide into the atmosphere. Sulfur dioxide can even be produced by the reaction of hydrogen sulfide with the oxygen in the air. Hydrogen sulfide is released from marshes and regions in which biological decay is taking place, as explained by David W. Brooks from the University of Nebraska – Lincoln.

Health Effects: Contact with SO_2 , whether by skin, eye or inhalation, can have serious health consequences. At low levels, it produces irritation of the eyes or throat and lungs. At higher concentrations, it can produce chemical burns which are especially dangerous if the gas is inhaled, and can lead to serious lung damage. A concentration in air of 2,520 parts per million (*ppm*) was found to be lethal in animal testing. The U.S. Occupational Safety and Health Administration (*OSHA*) have set an exposure limit of 5 *ppm* SO_2 in air for the workplace.²²

Sulfates (SO_{42-}): Sulfates are the fully oxidized ionic form of sulfur. They occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

Health Effects: The *ARB*'s sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardiopulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to the fact that they are usually acidic, can harm ecosystems and damage materials and property.²³

Visibility-Reducing Particles: Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consist of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.

Health Effects: No specific health effects have been identified. The state air quality standard was developed to protect scenic qualities.

Other Air Pollutants

Volatile Organic Compounds (VOC): These volatile gases, also known as *ROG*, are hydrocarbon leftovers emitted into the air when fossil fuels don't burn completely. *VOCs* are emitted by vehicles, manufacturing and consumer products including hair sprays, engine degreasers, anti-perspirants and deodorants, air fresheners, windshield washer fluids, charcoal light fluid, and household cleaners. In the atmosphere, when sunlight, *VOCs*, *NOx* and oxygen are mixed together, a new chemical combination is formed, ozone, which is the major ingredient of smog. At dairies and confined bovine facilities, *VOCs* are emitted from the degradation of organic matter in manure.

Health Effects: As a component of ozone, *VOCs* contribute to ozone's health effects. In addition, some *VOCs* themselves may be toxic.²⁴

Methane (CH_4): Methane (CH_4) is the second most prevalent greenhouse gas emitted in the United States from human activities. In 2013, CH_4 accounted for about 10% of all U.S. greenhouse gas emissions from human activities. Methane is emitted by natural sources such as wetlands, as well as human activities such as leakage from natural gas systems and the raising of livestock. Natural processes in soil and chemical reactions in the atmosphere help remove CH_4 from the atmosphere. Methane's lifetime in the atmosphere is much shorter than carbon dioxide (CO_2), but CH_4 is more efficient at trapping radiation than CO_2 . Pound for pound, the comparative impact of CH_4 on climate change is more than 25 times greater than CO_2 over a 100-year period.

Globally, over 60% of total CH_4 emissions come from human activities. Methane is emitted from industry, agriculture, and waste management activities, described below.

- **Industry.** Natural gas and petroleum systems are the largest source of CH_4 emissions from industry in the United States. Methane is the primary component of natural gas. Some CH_4 is emitted to the atmosphere during the production, processing, storage, transmission, and distribution of natural gas. Because gas is often found alongside petroleum, the production, refinement, transportation, and storage of crude oil is also a source of CH_4 emissions.
- **Agriculture.** Domestic livestock such as cattle, buffalo, sheep, goats, and camels produce large amounts of CH_4 as part of their normal digestive process. Also, when animals' manure is stored or managed in lagoons or holding tanks, CH_4 is produced. Because humans raise these animals for food, the emissions are considered human-related. Globally, the Agriculture sector is the primary source of CH_4 emissions.
- **Waste from Homes and Businesses.** Methane is generated in landfills as waste decomposes and in the treatment of wastewater. Landfills are the third largest source of CH_4 emissions in the United States.

Methane is also emitted from a number of natural sources. Wetlands are the largest source, emitting CH_4 from bacteria that decompose organic materials in the absence of oxygen. Smaller sources include termites, oceans, sediments, volcanoes, and wildfires. Methane (CH_4) emissions in the United States decreased by almost 15% between 1990 and 2013. During this time period, emissions increased from sources associated with agricultural activities, while emissions decreased from sources associated with the exploration and production of natural gas and petroleum products.

Health Effects: Methane is not toxic. It may displace oxygen in an enclosed space and asphyxia may result if the oxygen concentration is reduced below 19.5%.²⁵

Carbon Dioxide (CO_2): Carbon dioxide (CO_2) is the primary greenhouse gas emitted through human activities. For more information on CO_2 emissions, see Section 3.9.

Health Effects: When inhaled at high concentrations, CO_2 produces a sour taste in the mouth and a stinging sensation in the nose and throat. If inhaled at high concentrations, it can cause asphyxiation.²⁶

Ammonia (NH_3): Ammonia (NH_3) is a lighter-than-air, colorless gas with a recognizable pungent smell. It is a source of the essential nutrient nitrogen for plants and animals, but also is classified as a hazardous substance by the U.S. Environmental Protection Agency (EPA). Ammonia occurs naturally and is normally found in trace amounts in the atmosphere where it is the dominant base, combining readily with acidic compounds. It is produced by the decomposition or fermentation of animal and plant matter containing nitrogen, including livestock manure. There is concern about ammonia because of its potential to negatively affect air and water quality, and human and animal health.

Concentrated animal feeding operations (CAFOs) import feed ingredients that contain large quantities of nutrients such as nitrogen. Cattle retain a proportion of the nitrogen they consume, but approximately 70-90% is excreted in feces and urine. Ammonia is produced by breaking down nitrogenous molecules in manure, such as urea and protein. Urea in urine is rapidly converted to ammonia and is a major ammonia source in manure, while more complex nitrogen-containing compounds, such as proteins, are decomposed more slowly by microbes.

Historically, ammonia was considered a problem only within livestock buildings with inadequate ventilation or poor management. High ammonia levels negatively affect animal health and production, and threaten the health of humans working inside. Correcting ventilation problems and periodically removing animal waste reduces ammonia levels within the building, but these measures do not address the problem of ammonia emissions into the atmosphere. Ammonia emissions to the atmosphere from open-lot CAFOs now also must be addressed.

Ammonia begins to volatilize (convert to a gas and be lost to the atmosphere) almost immediately after urea is excreted. The loss can continue as manure is handled, stored, or land-applied as fertilizer. As an essential plant nutrient, nitrogen is a primary component of fertilizer; nitrogen lost to the atmosphere from manure by ammonia volatilization is a loss of fertilizer value.

Ammonia in the atmosphere eventually returns to the Earth. Ammonia deposition occurs when ammonia in the atmosphere is deposited as gas, particulates, or in precipitation onto surfaces such as soil or water. Ammonia deposition on nutrient-starved farmlands may be beneficial to crops; however, deposition in sensitive areas may be undesirable.

The complexity of biological and chemical processes, coupled with management decisions, complicates the understanding of ammonia emissions from livestock operations. Differences in livestock digestive systems, diets fed, feed and manure management systems, facility design, location, and weather are just a few of the factors that affect ammonia sources and emissions.

Estimated contributions of various U.S. ammonia sources based on the National Emissions Inventory (EPA, 2008) show beef – 25.0%; poultry 23.4%; dairy 20.5%; swine, sheep, goats and horses 17.5%; vehicles 7.6%; industry 4%; free combustion 1.4%; and waste disposal and recycling 0.6%.

Health Effects: Ammonia can significantly contribute to reduced air quality when it reacts with sulfur dioxide or nitrogen in the atmosphere to form aerosols. Aerosols, also known as particulate matter (PM), are atmospheric particles that are classified by the EPA according to their aerodynamic diameter.

Respirable aerosols are particles that can be deeply inhaled into the lungs and have a mean aerodynamic diameter of less than 2.5 micrometers ($PM_{2.5}$). $PM_{2.5}$ poses a threat to human health because it is associated with respiratory symptoms and diseases that lead to decreased lung function and, in severe cases, to premature death (EPA, 2009). Aerosols also reduce visibility in air, diminish irradiance, affect cloud formation, and alter the ozone layer.

Ammonia deposition can contaminate drinking water by increasing the nitrate concentration. This may occur by direct deposition onto water bodies, or indirectly by leaching of nitrogen from soils or erosion of nitrogen-laden soil particles into surface water.

Odor implications of ammonia are localized to regions in the vicinity of the CAFO. Ammonia is easily recognized by its smell, but is seldom associated with nuisance odor complaints near CAFOs any more than other manure constituents such as sulfides, cresols, or volatile fatty acids. Ammonia readily disperses from open lot feedyards and dairies, which helps to reduce its odor intensity to below human detection thresholds. Ammonia odors tend to be more noticeable inside animal barns than in open lots and are greater on or near CAFOs than at more distant off-site locations.²⁷

Toxic Air Contaminants (TAC)

Toxic air contaminants are defined as air pollutants which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those TAC that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set AAQS.

The CARB maintains the California Toxics Inventory²⁸ (CTI) which provides emission estimates for the San Joaquin Valley by stationary source, area source, mobile source and natural sources for 33 toxic compounds. The compounds included in the inventory were selected based on a list of air toxics used by the United States EPA in conducting the National Air Toxics Assessment (NATA). In developing the NATA list, the EPA considered a number of factors, including toxicity-weighted emissions, monitoring data, past air quality modeling analysis, and review of existing risk assessment literature. The California Toxic Inventory for these 28 compounds is summarized in Table 3.3-6.

**Table 3.3-6
San Joaquin Valley 2010 Toxic Inventory²⁹**

Pollutant	2010 CTI (tons/yr)
Diesel Particulate Matter	2,520
Formaldehyde	2,318
Benzene	1,020
Acetaldehyde	3,512
Acrolein	153
1,3-Butadiene	269
Methylene Chloride	247
Perchloroethylene	448
PAHs	238
p-Dichlorobenzene	130
Manganese	217
Styrene	96
Trichloroethylene	46
Chromium	34
Lead	28
Nickel	18
Acrylonitrile	7
Arsenic	5
Vinyl Chloride	7
Cadmium	3
Mercury	2
Ethylene Oxide	0
Chloroform	2
Ethylene Dichloride	0
Beryllium	0
Carbon Tetrachloride	0
Dioxins/Benzofurans	0
Chromium, Hexavalent	0

Based on the results of ambient air monitoring, *CARB* has identified ten substances that present the most potential for health risk. Health effects are summarized as follows:³⁰

Acetaldehyde is mainly used as an intermediate in the synthesis of other chemicals and is used in the production of perfumes, polyester resins, and basic dyes. Acetaldehyde is also used as a fruit and fish preservative, as a flavoring agent. It is an intermediate product of higher plant respiration and formed as a product of incomplete wood combustion in fireplaces and woodstoves, coffee roasting, burning of tobacco, vehicle exhaust fumes and coal refining and waste processing. Many individuals are exposed to acetaldehyde by breathing ambient air. Residential fireplaces and woodstoves are the two highest sources of emissions, followed by various industrial uses.

The primary acute effect of inhalation to exposure to acetaldehyde is irritation of the eyes, skin and respiratory track in humans. At higher exposure levels, erythematic, coughing, pulmonary edema and necrosis also occur.

Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Benzene is used as a constituent in motor fuels, as a solvent for fats, waxes, resins, oils, inks, paints, plastics, and rubber; in the extraction of oils from seeds and nuts; and in the manufacture of detergents, explosives, and pharmaceuticals.

Individuals employed in industries that manufacture or use benzene may be exposed to higher levels of benzene. Tobacco smoke contains benzene and accounts for nearly half the national exposure to this chemical.

Chronic inhalation of certain levels of benzene causes disorders in the blood, and affects bone marrow, aplastic anemia, excessive bleeding, and damage to the immune system. *EPA* has classified benzene as a Group A, known human carcinogen.

1,3-Butadiene emissions are derived from incomplete combustion of gasoline and diesel fuels, manufacturing and processing facilities, forest fires or other combustion, and tobacco smoke. Butadiene is used in the production of rubber and plastics. It is also used in copolymers including acrylics. 1,3-Butadiene has been found in highly industrialized cities or near oil refineries, chemical manufacturing plants and plastic rubber factories.

Acute exposure to 1,3-butadiene by inhalation results in irritation of the eyes, nasal passages, throat, and lungs. Neurological effects, and blurred vision, fatigue, headache and vertigo have also occurred at very high levels. Dermal exposures to 1,3-butadiene causes a sensation of cold, followed by a burning sensations, which may lead to frostbite. A large epidemiological study of synthetic rubber industry workers demonstrated a consistent association between 1,3-butadiene and occurrence of leukemia.

Carbon Tetrachloride may be found in both outdoor and indoor air. Carbon tetrachloride was produced in large quantities to make refrigerants and propellants for aerosol cans, as a solvent for oils, fats, lacquers, varnishes, rubber waxes, and resins, and a grain fumigant and a dry cleaning agent. Consumer and fumigant uses have been discontinued and only industrial uses remain.

Acute inhalation and oral exposure to high levels of carbon tetrachloride have been observed primarily to damage the liver and kidneys. Depression of the central nervous system has also been reported. Symptoms of acute exposure include headache, weakness, lethargy, nausea and vomiting. *EPA* has classified carbon tetrachloride as a probable human carcinogen.

Chromium-VI compounds are used for chrome plating, the manufacture of dyes and pigments, leather and wood preservation and treatment of cooling tower water. Air emissions of chromium are predominantly of trivalent chromium, and in the form of small particles or aerosols. Chromium in the atmosphere are those related to ferrochrome production, are refining, chemical and refractory processing, cement producing plants, automobile brake lining and catalytic converters for automobiles.

Respiratory tract is the major target organ for chromium VI resulting in shortness of breath, coughing and wheezing. Chronic inhalation exposure to chromium results in effects on the respiratory tract, with perforations and ulceration of the septum, bronchitis, decreased pulmonary function and pneumonia. *EPA* has classified chromium VI as a Group A, known carcinogen by the inhalation route of exposure.

p-Dichlorobenzene is used mainly as a fumigant for the control of moths, molds, and mildews, and as a space deodorant for toilets and refuse containers. The primary exposure to p-dichlorobenzene is from breathing contaminated indoor air.

Chronic exposure to p-dichlorobenzene by inhalation results in effects on the liver, skin, weakness in limbs and hyporeflexia. *EPA* has classified p-dichlorobenzene as a Group C, possible human carcinogen.

Formaldehyde is used predominantly as a chemical intermediate. It also has minor uses in agriculture, as an analytical reagent, in concrete and plaster additives, cosmetics, disinfectants, fumigants, photography, and wood preservation. The highest levels of airborne formaldehyde have been detected in indoor air, where it is released from various consumer products such as building materials and flooring. Smoking is another source of formaldehyde.

The major toxic effects caused by acute formaldehyde exposure via inhalation are eye, nose, and irritation. *EPA* considers formaldehyde to be a probable human carcinogen and has ranked it in *EPA's* Group B1.

Methylene Chloride is predominantly used as a solvent in paint strippers and removers; as a process solvent in the manufacture of drugs, pharmaceuticals, and film coatings; as a metal cleaning and finishing solvent in electronics manufacturing, and as an agent in urethane foam blowing. Methylene chloride is also approved for use as a post harvest fumigant for grains and strawberries and as a de-greening agent for citrus fruit. The principal route of exposure to methylene chloride is inhalation of ambient air. Occupational and consumer exposure to methylene chloride in indoor air may be much higher, especially from spray painting or other aerosol uses.

Case studies of methylene chloride during paint stripping operations have demonstrated that inhalation exposure to extremely high levels can be fatal. *EPA* considers methylene chloride to be a probable carcinogen and has ranked it in *EPA's* Group B2.

Perchloroethylene is a volatile compound (*VOC*) and is a manufactured chemical that is primarily used for cleaning fabrics and degreasing metals. It has also been used to make other chemicals including chlorofluorocarbons, and rubber coatings; as an insulating fluid and cooling gas in electrical transformers. It is an ingredient in aerosol products, soaps, printing inks, adhesives, sealants, paint removers, and leather treatments. Exposure to low levels of perchloroethylene in the air and water can occur because of industrial release.

Short-term exposure to high levels of perchloroethylene can affect the central nervous system and can cause unconsciousness and death. Long-term exposure may damage the central nervous system and kidneys; it can also cause respiration failure, memory loss, confusion and dry cracked skin.

Diesel Particulate Matter (DPM) is produced when an engine burns diesel fuel. It is a complex mixture of thousands of gases and fine particles (commonly known as soot) that

contains more than 40 toxic contaminants. These include many known or suspected cancer-causing substances, such as benzene, arsenic and formaldehyde. It also contains other harmful pollutants including nitrogen oxides (a component of smog). The toxic gases and small particles of diesel exhaust are drawn deep into the lungs. Diesel exhaust particles and gases are suspended in the air, so exposure to this pollutant occurs whenever a person breathes air that contains these substances. People living and working in urban and industrial areas are more likely to be exposed to this pollutant. Those spending time on or near roads and freeways, truck loading and unloading operations, and operating diesel-powered equipment face exposure to higher levels of diesel exhaust and therefore higher health death risks.

The elderly and people with emphysema and chronic lung disease are especially sensitive to fine-particle pollution. In its comprehensive assessment of diesel exhaust, the California Office of Environmental Health analyzed more than 30 studies of people who worked around diesel equipment. These studies showed these workers were more likely to develop lung cancer than workers who were not exposed to diesel emissions.³¹ Dairies and other bovine facilities (feed lots) operate daily with diesel equipment and diesel trucks that import feed supplies and transports milk processing to plants. Diesel is the primary toxic air emission generated at dairies and feedlots.

IMPACTS

In subsequent subsections (Impact #3.3.1 through Impact #3.3.5) of this chapter, various Program-related air pollutants will be evaluated to determine impact significance. The methodology and assumptions used in estimating Program-level emissions are detailed in Appendix E: Air Quality Methodology and Assumptions of this *EIR*.

Impact #3.3.1 – Conflict With or Obstruct Implementation of any Applicable Air Quality Plan:

[Evaluation Criteria (a)]

Applicable air quality plans are the *SJVAPCD* ozone plans and 2008 *PM_{2.5}* Plan. Under *CEQA* guidance projects above the *SJVAPCD* thresholds of significance for these criteria pollutants would conflict or obstruct implementation of the applicable *SJVAPCD* air quality plan. Because proposed Program emissions exceed *SJVAPCD* thresholds for *VOC* (an ozone precursor) and *PM_{2.5}*, the proposed Program emissions would conflict with applicable *SJVAPCD* ozone and *PM_{2.5}* Plans.

Conclusion: Because proposed Program emissions would conflict with applicable *SJVAPCD* ozone and *PM_{2.5}* Plans, this impact is *significant*.

Mitigation Measure #3.3.1: The County will require, as a component of the *ACFP* Annual Compliance Report, owners to submit evidence of full compliance with all pertinent *SJVAPCD* permits and regulations. If there is evidence of non-compliance, the County will notify the *SJVAPCD* and require the owner to submit a Corrective Action Plan.

Significance after Mitigation: Conflicts with applicable air quality plans would remain *significant* because it cannot be guaranteed that all future project-level air quality impacts would be below *SJVAPCD* significance thresholds.

Impact #3.3.2 – Cause a Violation of any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation: [Evaluation Criteria (b)]

Construction impacts include fugitive dust and other particulate matter, as well as exhaust emissions generated by earthmoving activities and operation of grading equipment during site preparation. Construction activities associated with expanded or new dairies and other bovine facilities would create construction emissions, as would Dairy *CAP GHG* reduction strategies that require construction.

Construction emissions are caused by onsite or offsite activities. Onsite emissions principally consist of exhaust emissions from heavy-duty construction equipment, motor vehicle operation, and fugitive dust from disturbed soil. Offsite emissions are caused by motor vehicle exhaust from delivery vehicles, as well as worker traffic, but also include road dust. Grading, earthmoving, and excavation are the activities that generated the most *PM₁₀* and *PM_{2.5}* emissions.

The *SJVAPCD* has developed a menu of fugitive dust control options that define the minimum content of a construction dust control program. Regulation VIII control measures are required for all construction projects to reduce the amount of *PM* emissions generated from fugitive dust sources. Non-residential developments of five or more acres of disturbed surface area, or moving, depositing, or relocating of more than 2,500 cubic yards per day of bulk materials on at least three days of the project are required to submit a Dust Control Plan to the *SJVAPCD*, however all projects are required to comply with Regulation VIII control measures to limit fugitive dust. Compliance with Regulation VIII is enforced by *SJVAPCD* inspectors and in response to the public complaint process for nuisance impacts.

Construction equipment emissions principally consist of exhaust emissions (*NO_x*, *CO*, *VOC*, *PM₁₀*, and *PM_{2.5}*) from heavy-duty construction equipment and motor vehicle operation. Additionally, paving operations and application of architectural coatings would release *VOC* emissions.

Construction of the new and expanded dairies would generate emissions from off-road construction equipment, on-road trucks and worker vehicles, and fugitive dust during grading. These emissions would occur over a 10-year planning horizon.

Fugitive dust emissions from site grading were estimated using an emission factor of 0.11 tons/acre per month. Grading was assumed to occur over five acres of actively disturbed land each day for six months for a single new or expanded dairy project.

Based on the emission estimates described above, the total unmitigated construction emissions for a single new or expanded dairy project were assumed to be:³²

<i>VOC</i>	0.8 tons per dairy
<i>CO</i>	3.8 tons per dairy
<i>SO_x</i>	0.0 tons per dairy
<i>NO_x</i>	7.2 tons per dairy
<i>PM₁₀</i>	3.7 tons per dairy
<i>PM_{2.5}</i>	0.8 tons per dairy

Operational emissions from existing dairy facilities are generated from various sources. The methodology and assumptions used in estimating the operational emissions are detailed in Appendix E, Air Quality Methodology and Assumptions. The main pollutants of concern generated from dairy and bovine facility operations include: volatile organic compounds (*VOCs*), carbon monoxide (*CO*), nitrogen oxide (*NO_x*), respirable particulate matter (*PM₁₀*), fine particulate matter (*PM_{2.5}*) and ammonia (*NH₃*). Also, minor amounts of sulfur dioxide are emitted during operations. Emission projections were based on a ten-year projection from 2013 to 2023, using the 2011 animal population baseline animal numbers, as described in Chapter 2.

Methods of estimating dairy source emissions vary by emission source and pollutant. Because of the predominance of motor vehicle emissions in California, methodologies for estimating mobile source emissions are well-documented. The State of California has developed computer programs able to estimate mobile source emissions for on-road vehicles that are flexible and adaptable to a wide variety of vehicle types, climates, and operating conditions.

The state of knowledge of other emission sources associated with dairies is far more variable. Some methods of estimating emissions are well-established, while others are new and developing as basic research is being conducted. All emission factors used in this study are current best estimates based on existing information.

The uncertainty inherent in the calculation of dairy emissions varies with the type of emissions. For example, the emission calculations for non-criteria pollutants such as ammonia (*NH₃*) and methane (*CH₄*) have a much greater uncertainty than for other pollutants because of their relatively recent identification as pollutants of concern.

The quantified emissions include:

- Criteria pollutants, including volatile organic compounds (*VOC*), carbon monoxide (*CO*), sulfur oxides (*SO_x*), nitrogen oxides (*NO_x*), particulate matter with diameters more than and less than 10 microns (*PM_{2.5}*); and
- Ammonia (*NH₃*).

Table 3.3-7 provides emissions associated with the dairy operations in 2011. These emissions were used as the 2013 baseline for the 2013-2023 ten-year emissions projections.

**Table 3.3-7
Existing Dairy/Feedlot Emissions in 2011 (Tons/Year)**

Source	VOC	CO	SO_x	NO_x	PM₁₀	PM_{2.5}	NH₃
Farm Equipment Exhaust	40	166	0.5	403	16	15	0
Farm Tilling and Harvesting Dust	0	0	0.0	0	663	99	0
Farm Windblown Dust	0	0	0.0	0	377	65	0
Farm Unpaved Road Dust	0	0	0.0	0	799	80	0
Dairy Equipment Exhaust	183	682	1.5	1,365	84	77	0
Dairy Unpaved Road Dust	0	0	0	0	104	10	0
Truck Trips	14	60	0.2	233	22	12	0
Dairy Employee and Visitor Trips	25	211	0.2	22	29	8	0
Dairy Cattle Housing Dust	0	0	0.0	0	2,352	269	0
Dairy Manure Decomposition/Enteric Fermentation	4,745	0	0.0	0	0	0	23,648
Dairy Animal Feed	6,005	0	0.0	0	0	0	0
Total Emissions	11,012	1,119	2.4	2,023	4,446	635	23,648
SJVAPCD Threshold	10	100	27	10	15	15	--

Notes:

1. Represent existing (2011) conditions relative to a zero baseline.

VOC = Reactive Organic Gases

CO = Carbon Monoxide

SO_x = Sulfur Oxides

NO_x = Nitrogen Oxides

PM₁₀ = Particulate Matter, 10 microns

PM_{2.5} = Particulate Matter, 2.5 microns

NH₃ = Ammonia

Program emissions were calculated for the total proposed dairy animal population and associated facility operations in Tulare County at a 10 year planning horizon, projected in this EIR to be 2023. Table 3.3-8 shows changes in 2023 emissions from the 2013 baseline. The impact analysis assumes that individual dairies and other bovine facilities will achieve the performance standards established by Regulation VIII, Rules 4550 and 4570, and implement a subset of the mitigation measures listed in these rules to achieve the performance standards.

The emissions increases in Table 3.3-8 are conservative estimates for two reasons. First, regarding existing dairies and other bovine facilities not in compliance with *SJVAPCD* requirements, the proposed Program includes a process for bringing such facilities into compliance. This process would result in reduced air emissions from such facilities, but these emissions reductions from existing facilities are not included in the 2023 projected emissions. Second, several Dairy *CAP GHG* reduction measures for expanded and new facilities would have the co-benefit of reducing criteria pollutant emissions, but such reductions are not accounted for in Table 3.3-8; Dairy *CAP GHG* emissions reductions measures that would also reduce criteria pollutant emissions include energy efficiency measures, bike parking and end of trip facilities, use of digesters, establishing onsite renewable energy systems (solar or wind), and combined heat and power systems.

**Table 3.3-8
Dairy Feedlot Emissions Changes, 2013-2023 (Tons/Year)**

Source	VOC	CO	SO _x	NO _x	PM ₁₀	PM _{2.5}	NH ₃
Farm Equipment Exhaust	-19	16	0.1	-246	-10	-9	0
Farm Tilling and Harvesting Dust	0	0	0.0	0	145	22	0
Farm Windblown Dust	0	0	0.0	0	83	15	0
Farm Unpaved Road Dust	0	0	0.0	0	174	17	0
Dairy Equipment Exhaust	-86	70	0.3	-769	-54	-50	0
Dairy Unpaved Road Dust	0	0	0.0	0	22	3	0
Truck Trips	-7	-31	0.3	-158	4	-6	0
Dairy Employee and Visitor Trips	-15	-145	0.0	-15	6	1	0
Dairy Cattle Housing Dust	0	0	0.0	0	381	43	0
Dairy Manure Decomposition/Enteric Fermentation	767	0	0.0	0	0	0	8,436
Dairy Animal Feed	1,178	0	0.0	0	0	0	0
Total Emissions	1,818	-90	0.7	1,188	751	36	8,436
SJVAPCD Threshold	10	100	27	10	15	15	--

Notes:

1. 2023 emissions represent the net change from 2013 emissions associated with a 1.5 percent increase in the dairy population over the 10 year planning horizon.

VOC = Reactive Organic Gases

CO = Carbon Monoxide

SO₂ = Sulfur Oxides

NO_x = Nitrogen Oxides

PM₁₀ = Particulate Matter, 10 microns

PM_{2.5} = Particulate Matter, 2.5 microns

NH₃ = Ammonia

As shown by Table 3.3-8, emission increases in 2023 exceed the SJVAPCD's significance thresholds for VOC, PM₁₀ and PM_{2.5}. An analysis of these and other pollutants of concern is provided as follows:

PM₁₀/PM_{2.5}

PM₁₀/PM_{2.5} emissions are generated by several activities associated with dairy operations, principally dust from cattle movement on and periodic maintenance of unpaved surfaces, and continued farming operations. PM_{2.5} emissions are calculated based on conversions of PM₁₀ to PM_{2.5} by multiplying CARB-derived fractions for each source category.

Dairy emissions include ammonia (NH₃). Ammonia acts as a precursor of PM_{2.5} in the atmosphere. To calculate PM_{2.5} from ammonia emissions is similar to the quantification (that is, something that is capable of being measured or counted) of emissions of VOC and NO_x as precursors to the way ozone is formed. Just as it is not possible to convert new emissions of ozone precursors into amounts or concentrations of ozone in the atmosphere, it cannot be done for ammonia-related PM_{2.5}. Given the current uncertainty in emission rates for ammonia and the lack of a method of calculating PM_{2.5} conversion from ammonia emissions, any calculation of secondary PM_{2.5} would be speculative.

VOC

Volatile organic compounds (*VOCs*) are generated at any location where cattle are housed or where manure undergoes anaerobic (oxygen-deficient) decomposition. *VOCs* are a subset of total organic gases (*TOGs*). Volatile organic compounds are photochemically reactive hydrocarbons that are precursors of ozone formation. In order to develop most conservative values for *VOC* and methane production, it has been assumed that all manure, liquid or solid, on the project sites decomposes anaerobically (that is, not needing oxygen), although thin-layer manure applications to crops may actually result in aerobic (that is taking place only in the presence of oxygen) decomposition. *TOGs* are mostly methane, which is photochemically non-reactive and is not considered an ozone precursor. *VOC* emissions estimates assume that Rule 4570, which substantially reduces *VOC* emissions, applies. Methane is discussed in Section 3.7, Greenhouse Gas Analysis, of this Chapter.

NOx

Methods of estimating *NOx* emissions vary by emission type and characteristic. Because of the predominance of mobile sources for *NOx* in California, methodologies for estimating mobile source emissions are well documented and easiest to prepare. The State of California and the *SJVAPCD* have developed computer models capable of estimating mobile sources for *NOx* that allow accurate estimates.

The state of knowledge and reliability/accuracy of other *NOx* emissions associated with dairy facilities is less. Dairy facilities emissions are largely from area sources. Published *NOx* emission rates for area sources vary. Both the *EPA* and the *CARB* maintain indices of methodologies for estimating emissions. Not all emission types are covered in these indices, so factors prepared by industry groups are often the best information available.

All existing stationary equipment must, if modified or replaced, now comply with *SJVAPCD* Rule No. 2201.

CO

CO emissions are associated with exhaust from onsite farm equipment, dairy/bovine facility equipment, heavy-duty trucks, and employee vehicles. On-site *CO* emissions would disperse rapidly and background concentrations of *CO* are minimal. *CO* concentrations are no longer monitored in Tulare County.

Health Impacts

The proposed Program would have significant *VOC*, *PM₁₀* and *PM_{2.5}* impacts. *VOCs* contribute to ozone formation; health effects of ozone and toxic air contaminant emissions are described in the Environmental Setting section. Similarly, health effects of *PM₁₀* and *PM_{2.5}* emissions are also described in the Setting section. It is reasonable to conclude that in general, increases in mass emissions of these pollutants would contribute to the adverse effects on public health described in the Environmental Setting section. Proven scientific models that are designed to quantitatively

correlate countywide mass emissions increases of *VOC* and *PM*_{2.5} to project-specific health impacts are not available. As pointed out by the *SJVAPCD NOP* response letter,³³ accurate quantification of health risks requires detailed site specific information, e.g., type of emission source, proximity of source to sensitive receptors, and trip generation information.

Conclusion: Emissions increases exceed the *SJVAPCD*'s significance thresholds for *VOC*, *PM*₁₀ and *PM*_{2.5}. Because proposed Program emissions would violate or contribute to violation of air quality standards, the impact is *significant*.

Mitigation Measure #3.3.2: The County will require, as a component of the *ACFP* Annual Compliance Report, owners to submit evidence of full compliance with all pertinent *SJVAPCD* permits and regulations. If there is evidence of non-compliance, the County will notify the *SJVAPCD* and require the owner to submit a Corrective Action Plan.

Significance after Mitigation: The imposition of the mitigation measure would reduce the Program impacts for new dairy and other bovine facilities, but they remain *significant* because Program impacts would likely still exceed *SJVAPCD* significance thresholds.

Impact #3.3.3: 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:
[Evaluation Criteria (c)]

The San Joaquin Valley Air Basin (Air Basin) is in nonattainment for federal ozone and *PM*_{2.5} standards, and state ozone, *PM*₁₀, and *PM*_{2.5} standards. As discussed in Impact #3.3.2, Program emissions may contribute to violations of the ozone and *PM*_{2.5} ambient air quality standards.

Per *SJVAPCD CEQA* guidance, if project specific emissions exceed the *SJVAPCD* thresholds of significance for criteria pollutants, the project would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the District is in non-attainment under applicable federal or state ambient air quality standards. As discussed in Impact #3.3.2, the proposed Program emissions would exceed *SJVAPCD* significance thresholds for *VOC* (an ozone precursor), *PM*₁₀, and *PM*_{2.5}. Therefore, the proposed Program's emissions of these pollutants would also be cumulatively considerable.

Conclusion: Because the proposed Program emissions of *VOC* and *PM*_{2.5} would be cumulatively considerable, they are also *significant*.

Mitigation Measure #3.3.3: The County will require, as a component of the *ACFP* Annual Compliance Report, owners to submit evidence of full compliance with all pertinent *SJVAPCD* permits and regulations. If there is evidence of non-compliance, the County will notify the *SJVAPCD* and require the owner to submit a Corrective Action Plan.

Effectiveness of Measures: The imposition of mitigation measures would reduce the Program impacts for new dairy and other bovine facilities, but they remain *significant* because Program emissions would likely still be cumulatively considerable for *VOC* (an ozone precursor) and *PM_{2.5}*.

**Impact #3.3.4: Expose Sensitive Receptors to Substantial Pollutant Concentrations:
[Evaluation Criteria (d)]**

The *SJVAPCD* has adopted the following significance thresholds for Toxic Air Contaminants:

- Carcinogens: maximally exposed individual risk equals or exceeds 10 in one million; and
- Non-carcinogens (acute and chronic): hazard index equals 1 for the maximally exposed individual.

There are two potential main sources of toxic air contaminants associated with the project: Diesel Particulate Matter (*DPM*) from construction equipment during project construction and *DPM* from service and delivery vehicles servicing the facilities during project operation. Some *VOCs* emitted during project operations are also *TACs*.

The California Office of Environmental Health Hazard Assessment (*OEHHA*) provides exposure variants for 9-, 30-, and 70-year exposures in “The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.” These exposures are chosen to coincide with *EPA*’s estimates of the average (9 years), and high-end estimates (30 years) of residence time, and a typical lifetime estimate (70 years). *OEHHA* states their support for the use of cancer potency factors for estimating cancer risk for these exposure durations. However, as the exposure duration decreases, the uncertainties introduced by applying cancer potency factors derived from very-long-term studies increases. Short-term high exposures are not necessarily equivalent to longer-term lower exposures even when the total exposure dose is the same. *OEHHA*, therefore, does not support the use of current cancer potency factor to evaluate cancer risk for exposures of less than 9 years (refer to page 8-4 of “The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments”).

Construction phase risks are considered acute health risks, as opposed to cancer risks which are long term. *OEHHA* has yet to define acute, high exposure, risk factors for diesel particulates that would allow the calculation of a hazards risk index; thus, evaluation of the health risks associated with construction activities would be speculative and no further discussion is necessary.

Although not considered a toxic air contaminant, the *SJVAPCD* is concerned with health impacts associated with particulate matter at the fence-line of new or expanding facilities. The facilities to be developed under the *ACFP* will be required to obtain an *ATC* and a *PTO* from the *SJVAPCD*. As part of the permitting process, the *SJVAPCD* may require a project-specific health-risk assessment to determine the significance of health impacts at the fence-line of the proposed dairy or bovine facility, and mitigation measures to reduce significant health risks.

The *SJVAPCD* risk management objectives for permitting and *CEQA* are as follows:³⁴

- Minimize health risks from new and modified sources of air pollution;

- Health risks from new and modified sources shall not be significant relative to the background risk levels and other risk levels that are typically accepted throughout the community; and
- Avoid unreasonable restrictions on permitting.

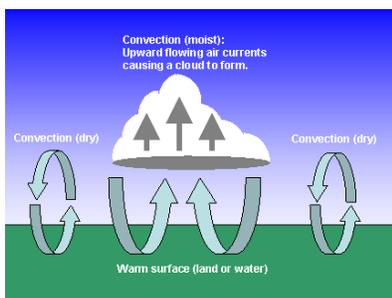
Facilities and equipment that require permits from the District are screened for risks from toxic emissions and those exceeding thresholds are subject to detailed health risk assessments. Projects exceeding *de minimis* levels are required to install Toxic Best Available Control Technology (*T-BACT*) to reduce risks to below significance. If a significant impact remains after *T-BACT* is implemented, the permit may not be issued unless it meets the discretionary approval criteria of the District Risk Management Policy for Permitting New and Modified Sources. Accordingly, compliance with these and other *SJVAPCD* air quality regulations will ensure that sensitive receptors are not exposed to substantial pollutant concentrations.

Also, the proposed *ACFP* has a number of siting criteria that would reduce the exposure of sensitive receptors to substantial pollutant concentrations from new dairy and other bovine facilities. These are included in Policies 2.2-2 (proximity to urban areas) and 2.2-3 (proximity to residential and agricultural land uses). These policies would reduce the exposure of sensitive receptors such as residences, parks, and schools.

Regarding health impacts, it is reasonable to conclude that in general, increases in mass emissions of *TACs* such as diesel particulates would contribute to the adverse effects on public health described in the Environmental Setting section. However, as pointed out by the *SJVAPCD NOP* response letter,³⁵ accurate quantification of health risks requires detailed site specific information, e.g., type of emission source, proximity of source to sensitive receptors, and trip generation information.

Conclusion: New or expanding dairies and other bovine facilities would comply with *SJVAPCD* air quality requirements, including Rule 4550 and 4570, and their requirements for health risk assessments and mitigation of health risk. Because sensitive receptors would not be exposed to substantial pollutant concentrations based on siting restrictions and compliance with *SJVAPCD* regulations, this impact is considered *less than significant*.

Mitigation Measures: None are required.



Impact #3.3.5: Exposure of a Substantial Number of People to Sources of Objectionable Odors:
[Evaluation Criteria (e)]

Odor formation from dairy operations – corrals, lagoons, and freestalls – is a complex process. Odor formation is most rapid during hot weather when anaerobic conditions set in the fastest. Conversely, odor at ground level can be diminished when heated surfaces induce gusty winds and convective turbulence (that is,

the heat causes air to rise taking odor along with it; see illustration of convection). Essentially, there is no time of day when odor potential is completely minimized. Odors “generate” faster in the day, but also disperse faster. Slower evening chemistry is offset by more stagnant weather.

Odor perception is strongly influenced by exposure duration. A person living on or near a dairy may be de-sensitized to the odor unless it is extremely pungent. Dairies typically have a farmhouse where the dairy owner, family, and often employees go about their daily routines such as working, eating, sleeping, etc., among the strongest odor concentrations without any perceived nuisance. Odors experienced by passengers in vehicles driving by a dairy have only short-term, and therefore create less than significant impacts. Odors are as mobile as the air around it. As such, wind movements will determine whether odor remains relatively on or near a dairy/bovine facility, or travels greater distances. The prevailing wind direction in Tulare County is toward the southeast, based upon Fresno-Yosemite Airport wind rose records. However, occasional shifts in wind direction will occur depending upon the weather and some areas typically unexposed to odor may detect it; thus the potential for nuisance will vary.

Factors which impact the analysis of the significance of odor impacts include the influence of dairy/bovine facility design, together with implementation of mitigation requirements for other impacts resulting in odor reduction as a supplemental benefit.

The proposed *ACFP* has a number of siting criteria that would reduce odor impacts. These are included in Policies 2.2-2 (proximity to urban areas) and 2.2-3 (proximity to residential and agricultural land uses). It also contains a right-to-farm provision to alert potential land owners wishing to locate in proximity to dairy/bovine facilities that odor will occur.

As pointed out by the *SJVAPCD NOP* response letter,³⁶ accurate characterization of nuisance odors requires detailed site specific information. New dairy and bovine facilities constructed under the *ACFP* will have to comply with proposed *ACFP* policies that reduce odor impacts. Additionally, such dairies and bovine facilities will need to acquire operating permits from the *SJVAPCD*. In order to obtain permits, the operators of the facilities will need to comply with *SJVAPCD* “Best Available Control Technology” to minimize emissions of *VOCs*. Typically, *VOCs* are the major source of odors from a facility. Accordingly, the odor impacts would be minimized through compliance with regulations by the County and the *SJVAPCD*.

Conclusion: Based on the above analysis, the proposed Program would not expose a substantial number of people to objectionable odors. The odor impact for expanded or new dairy and other bovine facilities is *less than significant*.

Mitigation Measure: None are required.

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- ⁵ Personal communication with Raymond Norman, Permits Department *SJVAPCD*, September 30, 2014.
- ⁶ Personal communication with Ryan Hyashi, Director of Compliance for *SJVAPCD*, November 17, 2014.
- ⁷ <http://www.valleyair.org/transportation/0714-GAMAQI-Criteria-Pollutant-Thresholds-of-Significance.pdf>
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- ²¹ Hydrogen Sulfide Emissions from Open/Dry-Lot Cattle-Feeding Operations <http://articles.extension.org/sites/default/files/hydrogensulfide%201>
- ²² Major Sources of Sulfur Dioxide http://www.ehow.com/info_8725183_sulfur-dioxide.html
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- ³² Dairy Cattle Emissions Update and Air Quality Methodology and Assumptions (see Appendix E).
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3.4 Biological Resources

INTRODUCTION

The natural vegetation communities of the central and southern San Joaquin Valley historically supported a diverse assemblage of plant and animals species. Conversion of large expanses of native plant communities to agricultural and urban uses has resulted in many species becoming endangered, threatened, rare or otherwise considered sensitive. This section identifies and addresses potential Program-related effects on special-status animal and plant species that could potentially be present in the Program area.

IMPACT EVALUATION CRITERIA

Pertinent criteria for evaluation of biological resources impacts are included in Appendix G of the *CEQA* Guidelines as:

Would the project:

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*
- c) Have a substantial adverse effect on federally protected wetlands and waters of the U.S. as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means, or on waters of the state?*
- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites?*
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

REGULATORY SETTING

The following environmental and regulatory settings were summarized, in part, from information contained in the Tulare County General Plan 2010 Background Report.¹

Federal Regulations

Clean Water Act - Section 404

Wetlands and other waters of the U.S. are subject to the jurisdiction of the U.S. Army Corps of Engineers (*USACE*) and U.S. *EPA* under Section 404 of the Clean Water Act (33 U.S.C. 1251 et seq., 1972).² Together, the *EPA* and the *USACE*, based on a fact-specific analysis, to determine if there is a significant nexus whether they have jurisdiction over non-navigable tributaries that are not relatively permanent. These non-navigable tributaries include wetlands adjacent to non-navigable tributaries that are not relatively permanent and wetlands adjacent to but not directly abutting a relatively permanent non-navigable tributary.

Wet areas that are not regulated by this Act do not have a hydrologic link to other waters of the U.S., either through surface or subsurface flow and include ditches that drain uplands, swales and other erosional features. The *USACE* has the authority to issue a permit for any discharge, fill, or dredge of wetlands on a case-by-case basis, or by a general permit. General permits are handled through a Nationwide Permit (*NWP*) process. These permits allow specific activities that generally create minimal environmental effects. Projects that qualify under the *NWP* program must fulfill several general and specific conditions under each applicable *NWP*. If a proposed project cannot meet the conditions of each applicable *NWP*, an individual permit would likely be required from the *USACE*.

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (*USFWS*) administers the federal Endangered Species Act (16 USC Section 153 et seq.)³ and thereby has jurisdiction over federally-listed threatened, endangered, and proposed species. Projects that may result in a “take” of a listed species or critical habitat must consult with the *USFWS*. “Take” is broadly defined as harassment, harm, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting; any attempt to engage in such conduct; or destruction of habitat that prevents an endangered species from recovering (16 USC 1532, 50 CFR 17.3).² Projects that do not have a federal nexus must apply for a take permit under Section 10 of the Act.

Habitat Conservation Plans

Habitat Conservation Plans (*HCPs*) are required for a non-federal entity that has requested a take permit of a federal listed species or critical habitat under Section 10 of the Endangered Species Act. *HCPs* are designed to offset harmful effects of a proposed project on federally listed species. These plans are utilized to achieve long-term biological and regulatory goals. Implementation of *HCPs* allows development and projects to occur while providing conservation measures that protect federally listed species or their critical habitat and offset the incidental take of a proposed project. *HCPs* can be project specific or regional in scope. Regional *HCPs* can

substantially reduce the burden of the Endangered Species Act (*ESA*) on small landowners by providing efficient mechanisms for compliance with the *ESA*, thereby distributing the economic and logistic effects of compliance. A broad range of landowner activities can be legally protected under these plans. There are generally two types of *HCPs*: project specific low effect *HCPs* which typically protect a few species and have a short duration, and high-effect multi-species *HCPs* that typically cover the development of a larger area and have a longer duration. The type of *HCP* required is based upon the required type of supporting *NEPA* documentation: a low effect *HCP* must be supported by a Categorical Exclusion whereas a high effect *HCP* would require an Environmental Assessment or Environmental Impact Statement.

Migratory Bird Treaty and Bald and Golden Eagle Protection Act

The Migratory Bird Treaty Act (*MBTA*, 16 *USC* Section 703-711)⁴ and the Bald and Golden Eagle Protection Act (16 *USC* Section 668)⁵ protect certain species of birds from direct “take”. The *MBTA* protects migrant bird species from take by setting hunting limits and seasons and protecting occupied nests and eggs. The Bald and Golden Eagle Protection Act (16 *USC* Sections 668-668d)⁴ prohibits the take or commerce of any part of Bald and Golden Eagles. The *USFWS* administers both acts, and reviews federal agency and private actions that may affect species protected by the acts.

Species Recovery Plan

The Recovery Plan for Upland Species of the San Joaquin Valley (Williams, et al, 1998), released and adopted by the *USFWS* in 1998,⁶ is a conservation and recovery plan for federally-listed species, candidate species, and species of concern. This recovery plan protects 34 species; 11 of which are federally-listed as threatened or endangered, and 23 listed as candidate species or species of concern. The ultimate objective of this plan is for the recovery and subsequent delisting of the 11 endangered or threatened species and for the long-term conservation of the candidate species and species of concern. This plan provides an ecosystem approach to the conservation and recovery of these species. The strategy of the plan is to focus on the recovery of the natural communities and ecosystems where many of the species co-occur. One of the key elements of this plan contains economic and social consideration with recommendations to “reduce the [fiscal] cost recovery, impacts of recommended actions on the local economy, and the constraints placed on the citizens of the San Joaquin Valley.”

State Regulations

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (*DFW*) regulates the modification of the bed, bank, or channel of a waterway under Sections 1601-1607 of the California Fish and Game Code.⁷ Included are modifications that divert, obstruct, or change the natural flow of a waterway, or affect riparian resources. Any party who proposes an activity that may modify a feature regulated by the Fish and Game Code must notify *DFW* before project construction. *DFW* will then decide whether to enter into a Streambed Alteration Agreement with the project applicant either under Section 1601 (for public entities) or Section 1603 (for private entities) of the Fish and Game Code.

California Endangered Species Act

DFW administers the California Endangered Species Act (Fish and Game Code Section 2080), which regulates the listing and “take” of endangered and threatened State-listed species. “Take” is defined by the California Endangered Species Act as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill” a State-listed species (Fish and Game Code Sec. 86).⁸ Authorization for take of state-listed species may be obtained through a Section 2080.1 consistency determination (for applicants who have already obtained a federal incidental take statement or permit for the same species) or a Section 2081 incidental take permit.

The *DFW* maintains lists for Candidate-Endangered Species (*SCE*) and Candidate-Threatened Species (*SCT*). California candidate species are afforded the same level of protection as State-listed species. California also designates Species of Special Concern (*CSC*) that are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species, but may be added to official lists in the future.

Protection of Birds, Nests, and Raptors

Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction. These code sections do not provide for the issuance of any type of incidental take permit.

Fully Protected Species

Protection of fully protected species is described in Fish and Game Code Sections 3511, 4700, 5050, and 5515. Section 2081 incidental take permits may not be issued for take of fully protected species.

Natural Communities Conservation Planning Act

The Natural Communities Conservation Planning Act allows a process for developing natural community conservation plans (*NCCPs*) under *DFW* direction. *NCCPs* allow for regional protection of wildlife diversity, while allowing compatible development. In accordance with Fish and Game Code Section 2800⁹ et seq., *DFW* may permit takings of State listed species whose conservation and management are provided for in an *NCCP*, once a *NCCP* is prepared. Furthermore, state designated "Fully Protected" species can be taken as authorized by an *NCCP* (*SB* 618).

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act regulates the discharge of waste into waters of the State. The Regional Water Quality Control Board (*RWQCB*) administers this regulation. Water Code Section 13260 requires “any person discharging, or proposing to discharge waste, within any region that could affect the waters of the State to file a report of discharge.” A report of waste discharge (*RWD*) is essentially an application for waste discharge requirements (*WDRs*). *WDRs* contain conditions imposed on a given discharge by the appropriate *RWQCBs* for the purpose of protecting the beneficial uses of the waters of the State. Upon receipt of a *RWD*, the *RWQCB* may issue *WDRs* imposing conditions on the proposed discharge, or it may waive the requirement for *WDRs*.

Also, under Section 401 of the Clean Water Act, the *RWQCB* must also certify that Section 404 permits do not violate state water quality standards, or waive such certification.

Local Policies and Regulations

The Tulare County General Plan¹⁰ Environmental Resources Management Element contains numerous policies to protect the biological resources within the County. The County has no adopted ordinances specifically protecting biological resources.

ENVIRONMENTAL SETTING

This environmental setting describes habitats, sensitive natural communities, critical species habitats, other sensitive habitat areas, a critical species review, a listing of Federally and State-protected lands, *HCPs*, and a table of listed special status species and sensitive natural communities in order to provide a biological overview of the County and the project area. The habitats, lands and species unique to or occurring on the County’s Valley floor are denoted by an asterisk as an aid to the environmental analysis of the project.

Tulare County exhibits a diverse ecosystem landscape created through the extensive amount of topographic relief (elevations range from approximately 200 to 14,000 feet above sea level). The County is essentially divided into three eco-regions. The majority of the western portion of the County comprises the Great Valley Section, the majority of the eastern portion of the County is in the Sierra Nevada Section, and a small section between these two sections comprises the Sierra Nevada Foothill Area. Habitat types and ecosystems are often identified by general vegetation types. Table 3.4-1 identifies the 14 habitat types and acreages of each found in Tulare County.¹¹ It is representative of 2011 (baseline) conditions.

The dominant land use type on the valley floor is agricultural habitat which covers approximately 795,340 acres.¹² Vegetation composition and structure in agricultural habitats are variable, depending on the type of crops grown and the time of year. For these reasons, habitat value for wildlife is also a variable. In addition, the types and timing of operational activities of agricultural lands affect habitat suitability for wildlife. Tall and maintained crops such as vineyards will provide different habitat value and likely support different wildlife species than short crops with a lot of exposed bare ground between rows, or pasture land. Typical wildlife species that may use agricultural habitat include a variety of rodents and birds. Croplands

provide food and water for these species, but do not generally provide long-term shelter due to the frequency of disturbance.

**Table 3.4-1
Habitat Types of Tulare County**

Habitat Type	Acres (approximate)	Percent of County
Alpine Habitat	1,130	0.04
Annual Grassland	339,600	10.97 *
Barren	183,680	5.93 *
Chaparral	153,790	4.97
Conifer Forest	835,150	26.97
Conifer Woodland	165,180	5.33
Desert Scrub	23,640	0.76 *
Hardwood Woodland	416,560	13.45
Open Water	10,680	0.34 *
Mixed Hardwood/Conifer Forest	92,340	2.98
Riparian	4,580	0.15 *
Urban	56,220	1.82 *
Vineyard/Cropland	795,340	25.68 *
Wetlands	18,750	0.61 *
Total Acreage	3,096,640	100.0

Source: Tulare County General Plan 2030 Update Background and Information,

SENSITIVE VEGETATIVE COMMUNITIES

A sensitive natural community is a rare vegetation type that provides important habitat elements for wildlife, is structurally complex, or is of special concern to local, State, or federal agencies. Natural communities that are either known or believed to be of high priority are listed in the California Natural Diversity Database (CNDDDB). The following ten sensitive natural communities are historically known to occur in Tulare County¹³ but only seven of these occur on the Valley floor (as denoted by asterisks):

- Big Tree Forest;
- Central Valley Drainage Hardhead/Squawfish Stream;
- Great Valley Valley Oak Riparian Forest; *
- Northern Hardpan Vernal Pool; *
- Northern Claypan Vernal Pool; *
- Southern Interior Cypress Forest;
- Sycamore Alluvial Woodland; *
- Valley Sacaton Grassland *
- Valley Saltbush Scrub; and *
- Valley Sink Scrub. *

SPECIAL STATUS SPECIES

The California Natural Diversity Database (CNDDDB 2016),¹⁴ California Native Plant Society (CNPS 2016)¹⁵ Database, and U.S. Fish and Wildlife Service¹⁶ (USFWS 2016) documented 211 occurrences of special status species in Tulare County. Table 3.4-2 documents federally-listed

species, State-listed species, species of special concern, and CNPS List 1A, 1B, and 2B species that have been that have the potential to occur in the Program area based upon documented occurrences within the 45 U.S. Geological Survey (USGS) 7.5-minute quadrangles that encompass the Valley floor of Tulare County as well as the surrounding 28 quadrangles.

Table 3.4-2
Sensitive Vegetative Communities and Special Status Species
Occurring in the Region of the Proposed Program

Scientific Name	Common Name	Status
SENSITIVE NATURAL COMMUNITIES		
Central Valley Drainage Hardhead/Squawfish Stream	Central Valley Drainage Hardhead/Squawfish Stream	RARE
Great Valley Mixed Riparian Forest	Great Valley Mixed Riparian Forest	RARE
Great Valley Valley Oak Riparian Forest *	Great Valley Valley Oak Riparian Forest	RARE
Sycamore Alluvial Woodland *	Sycamore Alluvial Woodland	RARE
Northern Claypan Vernal Pool *	Northern Claypan Vernal Pool	RARE
Northern Hardpan Vernal Pool *	Northern Hardpan Vernal Pool	RARE
Valley Sacaton Grassland *	Valley Sacaton Grassland	RARE
Valley Saltbush Scrub *	Valley Saltbush Scrub	RARE
Valley Sink Scrub *	Valley Sink Scrub	RARE
PLANTS		
<i>Astragalus hornii</i> var. <i>hornii</i>	Horn's milk vetch	1B.1
<i>Atriplex cordulata</i> var. <i>cordulata</i> *	Heartscale	1B.2
<i>Atriplex cordulata</i> var. <i>erecticaulis</i> *	Earlimart orache	1B.2
<i>Atriplex coronata</i> var. <i>vallicola</i> *	Lost Hills crownscale	1B.2
<i>Atriplex depressa</i> *	Brittlescale	1B.2
<i>Atriplex minuscula</i> *	Lesser saltscale	1B.1
<i>Atriplex persistens</i> *	Vernal pool smallscale	1B.2
<i>Atriplex subtilis</i> *	Subtle orache	1B.2
<i>Brodiaea insignis</i> *	Kaweah brodiaea	SE, 1B.2
<i>California macrophylla</i> *	round-leaved filaree	1B.2
<i>Calochortus striatus</i> *	alkali mariposa-lily	1B.2
<i>Caulanthus californicus</i> *	California jewel-flower	FE, CE, 1B.1
<i>Chamaesyce (Euphorbia) hooveri</i>	Hoover's spurge	FT, 1B.2
<i>Cirsium crassicaule</i>	Slough thistle	1B.1
<i>Clarkia springvillensis</i>	Springville clarkia	FT, CE, 1B.2
<i>Delphinium recurvatum</i> *	Recurved larkspur	1B.2
<i>Eremalche kernensis</i>	Kern mallow	FE, 1B.1
<i>Eriogonum nudum</i> var. <i>murinum</i>	mouse buckwheat	1B.2
<i>Eryngium spinosepalum</i> *	spiny-sepaled button-celery	1B.2
<i>Fritillaria striata</i> *	striped adobe-lily	ST, 1B.1
<i>Glyceria grandis</i>	American manna grass	2B.3
<i>Helianthus winteri</i> *	Winter's sunflower	1B.2
<i>Imperata brevifolia</i> *	California satintail	2B.1
<i>Juncus nodosus</i>	knotted rush	2B.3
<i>Lagophylla dichotoma</i>	forked hare-leaf	1B.1
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> *	Coulter's goldfields	1B.1
<i>Layia munzii</i>	Munz's tidy-tips	1B.2
<i>Monolopia congdonii</i>	San Joaquin woollythreads	FE, 1B.2
<i>Orcuttia inaequalis</i> *	San Joaquin Valley Orcutt grass	FT, SE, 1B.1
<i>Pseudobahia peirsonii</i> *	San Joaquin adobe sunburst	FT, SE, 1B.1
<i>Puccinellia simplex</i>	California alkali grass	1B.2
<i>Sidalcea keckii</i>	Keck's checkerbloom	FE, 1B.1
<i>Tropidocarpum capparideum</i>	caper-fruited tropidocarpum	1B.1

Scientific Name	Common Name	Status
<i>Tuctoria greenei</i> *	Greene's tuctoria	FE, 1B.1
INVERTEBRATES		
<i>Branchinecta conservatio</i>	Conservancy fairy shrimp	FE
<i>Branchinecta lynchi</i> *	vernal pool fairy shrimp	FT
<i>Desmocerus californicus dimorphus</i> *	valley elderberry longhorn beetle ¹⁷	FT
<i>Lepidurus packardii</i> *	vernal pool tadpole shrimp	FE
FISH		
<i>Entosphenus hubbsi</i>	Kern brook lamprey	CSC
<i>Oncorhynchus mykiss</i>	Central Valley steelhead	FT
AMPHIBIANS		
<i>Ambystoma californiense</i> *	California tiger salamander	FT, CT
<i>Batrachoseps regius</i>	Kings River slender salamander	CSC
<i>Rana boylei</i>	foothill yellow-legged frog	CSC
<i>Rana draytonii</i>	California red-legged frog	FT, CSC
<i>Spea hammondii</i> *	western spadefoot	CSC
REPTILES		
<i>Emys marmorata</i> *	western pond turtle	CSC
<i>Gambelia sila</i> *	blunt-nosed leopard lizard	FE, CE, FP
<i>Masticophis flagellum ruddocki</i> *	San Joaquin whipsnake	CSC
<i>Phrynosoma coronatum</i> *	coast horned lizard	CSC
<i>Thamnophis gigas</i>	giant garter snake	FT, CT
BIRDS		
<i>Accipiter gentilis</i>	northern goshawk	CSC
<i>Agelaius tricolor</i> *	tricolored blackbird	CSC
<i>Aquila chrysaetos</i> *	Golden eagle	FP
<i>Athene cunicularia</i>	burrowing owl	CSC
<i>Buteo swainsoni</i> *	Swainson's hawk	CT
<i>Charadrius alexandrinus nivosus</i> *	Western snowy plover	FT, CSC
<i>Charadrius montanus</i> *	Mountain plover	CSC
<i>Coccyzus americanus occidentalis</i> *	Western yellow-billed cuckoo	FT, CE
<i>Dendrocygna bicolor</i>	Fulvous whistling-duck	CSC
<i>Empidonax traillii eximius</i> *	Southwestern willow flycatcher	FE, CE
<i>Gymnogyps californianus</i> *	California condor	FE, CE
<i>Lanius ludovicianus</i> *	loggerhead shrike	CSC
<i>Strix nebulosa</i>	great gray owl	CE
MAMMALS		
<i>Ammospermophilus nelson</i> *	San Joaquin antelope squirrel	CT
<i>Antrozous pallidus</i> *	pallid bat	CSC
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	CSC
<i>Dipodomys ingens</i>	Giant kangaroo rat	FE, CE
<i>Dipodomys nitratoides exilis</i>	Fresno kangaroo rat	FE, CE
<i>Dipodomys nitratoides</i> *	Tipton kangaroo rat	FE, CE
<i>Euderma maculatum</i>	spotted bat	CSC
<i>Eumops perotis californicus</i> *	western mastiff bat	CSC
<i>Onychomys torridus tularensis</i>	Tulare grasshopper mouse	CSC
<i>Sorex ornatus relictus</i>	Buena Vista Lake ornate shrew	FE, CSC
<i>Taxidea taxus</i> *	American badger	CSC
<i>Vulpes macrotis mutica</i> *	San Joaquin kit fox	FE, CT

*CNDDDB historical records identified within the County's Valley floor

Abbreviations:

FE Federally Endangered
 FT Federally Threatened
 CE California Endangered

CT	California Threatened
CSC	California Species of Special Concern
FP	California Department of Fish and Wildlife Fully Protected
1A	California Native Plant Society List 1A Species- Plants Presumed Extinct in California
1B.1	California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Seriously Endangered in California
1B.2	California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Fairly Endangered in California.
1B.3	California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Not Very Endangered in California
2B.1	California Native Plant Society List 2B Species-Plants Categorized as Endangered in California; Seriously Endangered
2B.2	Native Plant Society List 2B Species-Plants Categorized as Endangered in California; Fairly Endangered in California
2B.3	Native Plant Society List 2B Species-Plants Categorized as Endangered in California; Not Very Endangered in California

Special Status Plants

The database search listed the potential for 34 special status plant species to occur within the 73 USGS 7.5-minute quadrangles. However, only 20 special status plant species were identified by the CNDDDB as historically occurring on the Valley floor of Tulare County (Table 3.4.2). These consist of six federally and State listed species including Kaweah brodiaea (*Brodiaea insignis*), California jewelflower (*Caulanthus californicus*), striped adobe-lily (*Fritillaria striata*), San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*), San Joaquin adobe sunburst (*Pseudobahia peirsonii*), Greene's tuctoria (*Tuctoria greenei*) and 14 CNPS List 1B and 2B species.

The California jewelflower is known to occur in non-native grasslands and chenopod scrub habitats. All natural occurrences of this species on the San Joaquin Valley floor had been extirpated¹⁸ and the potential for the California jewelflower to occur within the Program area is low. The Kaweah brodiaea, striped adobe-lily, and San Joaquin adobe sunburst are primarily associated with valley and foothill grasslands and cismontane woodlands. These species could potentially occur in the extreme eastern portion of the Program area along the foothills of Tulare County. The San Joaquin Valley Orcutt grass and Greene's tuctoria are associated with vernal pool habitat and could occur on undeveloped land of the Program area that contains grasslands and pastures containing vernal pools.

Special Status Wildlife Species

The database search listed of the potential for 177 special status wildlife species to occur within the 73 USGS 7.5-minute quadrangles. The CNDDDB identified historical occurrences of 44 special status wildlife species on the Valley floor of Tulare County, consisting of federally-listed species, State-listed species, and species of special concern (Table 3.4.2). Twenty seven special status wildlife species could potentially occur within the Program area, including three invertebrates, two amphibians, four reptiles, nine birds, and eight mammals, as described below.

Vernal Pool Branchiopods

The entire life history of vernal pool fairy shrimp occurs within seasonally inundated vernal pools. Pools become inundated with rain water during the rainy season, which typically extends from late fall through early spring. There are 35 historical records of the vernal pool fairy shrimp (*Branchinecta lynchi*) and one record of midvalley fairy shrimp (*Branchinecta mesovallensis*) occurring on the Valley floor of Tulare County. The vernal pool fairy shrimp and midvalley fairy

shrimp, as well as other branchiopods such as the conservancy fairy shrimp (*Branchinecta conservatio*) and vernal pool tadpole shrimp (*Lepidurus packardi*), could potentially occur on the undeveloped land within the Program area. Critical Habitat designated for the vernal pool fairy shrimp and vernal pool tadpole shrimp occurs within the Valley floor of Tulare County.

California Tiger Salamander

The California tiger salamander (*Ambystoma californiense*) is a federal and State threatened species and a State species of special concern. This species is most commonly found in annual grassland habitat, but can occur in the grassy understory of valley foothill hardwood habitats, and uncommonly along stream courses in valley foothill riparian habitats. California tiger salamander is restricted to grasslands and low foothill regions where lowland aquatic sites are available for breeding because this species requires ponds or pools that remain inundated for 10 weeks or more. This species also requires nearby upland terrestrial habitat for aestivation that contains small mammal burrows (particularly California ground squirrel burrows) or crevices that provide refugia. Critical Habitat designated for the California tiger salamander occurs within the Valley floor of Tulare County.

Western Spadefoot

The western spadefoot (*Spea hammondi*) is a California Species of Special Concern. This species is restricted to grasslands and low foothill regions where lowland aquatic sites are available for breeding. It remains in underground burrows during most of the year. It usually constructs its own burrow, but will also opportunistically utilize small mammal burrows. Adults typically initiate surface movements during the first fall rains to breed. They breed almost exclusively in shallow, temporary pools created by winter rains. Recently metamorphosed juveniles seek refuge in the immediate vicinities of breeding ponds for several days after transformation. There are 25 historical records of the western spadefoot occurring on the Valley floor of Tulare County. This species could potentially occur within the Program area.

Western Pond Turtle

The western pond turtle (*Actinemys marmorata*) is a California Species of Special Concern, and is under review by the USFWS for protection under the Endangered Species Act. This species inhabits vegetated ponds, lakes, and watercourses including rivers, streams, creeks, and canals with basking substrates such as logs, rocks, and exposed banks. There is one historical record of the western pond turtle occurring on the Valley floor of Tulare County and this species could potentially occur along watercourses and in vegetated ponds and lakes within the Program area.

Blunt-Nosed Leopard Lizard

The blunt-nosed leopard lizard (*Gambelia sila*) is listed as a federal and State endangered species, and is a State fully protected species. It is included in the Recovery Plan for Upland Species of the San Joaquin Valley, California.¹⁹ The blunt-nosed leopard lizard occurs in arid grasslands, scrublands, alkali flats, and washes. It prefers relatively flat areas with open space for running and hunting, avoiding densely vegetated areas. The species uses mammal dens and burrows for cover and shelter, and sometimes digs its own burrows. The number of available burrows is an important factor contributing to the abundance of this lizard in an area. The blunt-

nosed leopard lizard is known to occur at scattered, isolated localities throughout the San Joaquin Valley. There are 17 historical record of the blunt-nosed leopard lizard occurring on the valley floor of Tulare County. This species could occur on the fallowed or undeveloped land within the Program area.

San Joaquin Whipsnake

The San Joaquin whipsnake (*Masticophis flagellum ruddocki*) is a California Species of Special Concern. This snake inhabits open areas of grassland and scrub habitats, including rocky, sandy, flat, and hilly ground. This snake tends to avoid dense vegetation. There are two historical records of the San Joaquin whipsnake occurring on Tulare County Valley floor and this species could occur on the fallowed or undeveloped land of the Program area.

Coast Horned Lizard

The coast horned lizard (also known as Blainville's horned lizard or California horned lizard) (*Phrynosoma blainvillii*) is a California Species of Special Concern. This species inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains. It is often found in lowlands along sandy washes with scattered shrubs and along dirt roads, and frequently found near ant hills. There are six historical records of the coast horned lizard occurring on the Valley floor of Tulare County and this species could occur on the fallowed or undeveloped land of the Program area.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia*) is a California Species of Special Concern and is protected by the Migratory Bird Treaty Act. Burrowing owls typically occupies grasslands, deserts, sagebrush scrub, agricultural areas (including pastures and untilled margins of cropland), earthen levees and berms, coastal uplands, and urban vacant lots; as well as the margins of airports, golf courses, and roads. It selects sites that support short vegetation, even bare soil, presumably because this landscape increases visibility. This species is opportunistic and known to utilize abandoned or unused pipes. The burrowing owl nests and roosts in abandoned burrows dug by small mammals such as ground squirrels, but will sometimes occupy abandoned badger, or kit fox dens. There are nine historical records of the western burrowing owl occurring on the Valley floor of Tulare County and this species could occur within the Program area as a seasonal resident during the summer or winter or as a transient forager.

Tricolored Blackbird

The tricolored blackbird (*Agelaius tricolor*) is listed as a California endangered species and is protected under the Migratory Bird Treaty Act. The tricolored blackbirds inhabit emergent vegetation associated with wetlands and marshlands. This species will also use habitats such as seasonal ponds and pools, flood-irrigated agricultural lands (rice and hay fields), pastures and holding ponds associated with dairies and feedlots, and scrub and saltbush habitat for foraging. There are 17 historical records of the tricolored blackbird occurring on the valley floor of Tulare County and this species could occur within the Program area.

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is listed as a State fully protected species and is protected by the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and the Lacey Act. This species occurs primarily in rolling foothills, mountain areas, sage-juniper flats, and deserts and needs open terrain for hunting. Rugged, open habitats with canyons and escarpments are used most frequently for nesting. It maintains alternative nest sites, and also reuses old nests. There is one historical records of the golden eagle occurring on the Valley floor of Tulare County and this species could occur within the Program area as a transient forager.

Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) is listed as a State threatened species and is protected by the Migratory Bird Treaty Act. Swainson's hawks generally breed within riparian forests and other trees located within grasslands, agricultural lands, and open shrublands. They forage widely over forests, grasslands, shrublands, and agricultural areas and are easily disturbed by human activities. There are 35 historical records of the Swainson's hawk occurring on Tulare County's Valley floor. The Swainson's hawk could nest in the riparian trees, trees within windbreaks, and other trees or even on power poles within the Program area and could forage in the agriculturally developed, fallowed, and undeveloped lands.

California Condor

The California condor (*Gymnogyps californianus*) is listed as a federally and State endangered species and is a California fully protected species. Conservation guidelines are depicted in the California Condor Recovery Plan.²⁰ California condors nest in various types of rock formations, including crevices, overhung ledges, potholes, and, more rarely, cavities within giant sequoia trees. Most California condor foraging occurs in the open terrain of foothill grassland and oak savannah habitats and occasionally in open scrub habitat. There is one historical record of the California condor occurring on the valley floor of Tulare County. This species is mostly restricted to foothill and mountainous areas, but it could potentially occur within the Program area as a transient forager. Critical Habitat designated for the California condor occurs in the foothills of Tulare County, and it extends into the easternmost portions of the Program area. .

Western Snowy Plover

The western snowy plover (*Charadrius alexandrinus nivosus*) is listed as a federally threatened species, State Species of Special Concern, and is protected by the Migratory Bird Treaty Act. Conservation guidelines for this species are included in the Recovery Plan for the Pacific Coast Population of the Western Snowy Plover.²¹ The western snowy plover primarily breeds on sand pits, dune-backed beaches, creek and river mouth beaches, and estuaries, but will also breed further inland on river bars, ponds, and irrigation water impoundments. There are three historical records of the western snowy plover occurring on Tulare County Valley floor. This species may be found as a winter migrant throughout the Program area and could breed or forage near water sources on the fallowed and undeveloped land.

Mountain Plover

The mountain plover (*Charadrius montanus*) is a California Species of Special Concern and is protected by the Migratory Bird Treaty Act. This species inhabits open, arid, sparsely vegetated short-grass plains and fields, plowed fields, rolling hills, and deserts. The mountain plover prefers non-sandy soils with at least 30% bare ground, and favors prairie dog towns, areas heavily grazed by domestic livestock, bare ground areas near artificial watering structures, and recently fallowed or tilled crop fields. The mountain plover does not breed in California, but approximately 70% of the total population winters in the State. Valley sink scrub and non-native grasslands of the San Joaquin Valley, as well as agricultural lands, are used for overwintering. This species could potentially occur in the Program area as a seasonal visitor.

Fulvous Whistling-Duck

The fulvous whistling-duck (*Dendrocygna bicolor*) is a California Species of Special Concern and protected by the Migratory Bird Treaty Act. It inhabits and nests in marshlands, wet meadows, rice fields, flooded agricultural areas, and lagoons but prefers to nest in dense wetlands, shallow lacustrine and quiet riverine waters. The fulvous whistling-duck can sometimes feed in wet croplands and pastures if available. There are no historical records of this species occurring on the Valley floor of Tulare County. The fulvous whistling duck could potentially occur as a forager in wet croplands and pastures of the Program area.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is a California Species of Special Concern and is protected by the Migratory Bird Treaty Act. This species inhabits shrubland, open woodlands, grasslands, and other open habitats that provide woody or thorny shrubs and branches. There is one historical record of the loggerhead shrike occurring in the Tulare County Valley region. The wintering range of this species includes the San Joaquin Valley. The loggerhead shrike could occur nesting in undeveloped and follow lands of the Program area and as a transient forager.

Raptors And Other Migratory Birds

Various species of migratory birds and raptors, which are protected by the Migratory Bird Treaty Act and various provisions of the California Fish and Game Code, have the potential to occur within the Program area. Willows, cottonwoods, eucalyptus, and utility structures (e.g. power poles) provide habitat for tree-nesting species. The fallowed lands, undeveloped lands, and even lands that are actively cultivated provide habitat for ground-nesting species such as the northern harrier (*Circus cyaneus*) and western meadowlark (*Sturnella neglecta*).

Pallid Bat

The pallid bat (*Antrozous pallidus*) is a California Species of Special Concern. This species inhabits rocky arid deserts and canyon-lands, shrub-steppe grasslands, karst formations and is usually found roosting in rocky areas near water, and roosts in mines, rock piles, and tree cavities. This species is known to forage in open, sparsely vegetated areas. There are two historical records of the pallid bat occurring on the valley floor of Tulare County. The pallid bat

could potentially roost in tree cavities or rock formations and could occur as a transient and/or forager within the program area.

Townsend's Big-Eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is a California species of special concern. This species' habitat associations include coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Species distribution is strongly correlated with the availability of caves and cave-like roosting habitat, with population centers occurring in areas dominated by exposed, cavity forming rock and/or historic mining districts. There are no historical records of the Townsend's big-eared bat occurring on the Valley floor of Tulare County. This species could potentially occur within the Program area as a transient or forager.

Western Mastiff Bat

The western mastiff bat (*Eumops perotis californicus*) is a California Species of Special Concern. This species utilizes a wide variety of habitats for foraging and roosting including chaparral, coastal and desert scrub, open areas such as washes and agricultural lands, coniferous and deciduous forests and woodlands where roosting crevices in vertical rocky canyons and cliff-faces, trees, and man-made structures are present. There are four historical records of western mastiff bat occurring within the Valley floor of Tulare County and this species could potentially occur as a transient and/or forager.

San Joaquin Antelope Squirrel

The San Joaquin antelope squirrel (*Ammospermophilus nelsoni*) is listed as a State threatened species. It is included in the *Recovery Plan for Upland Species of the San Joaquin Valley, California*.²² This species frequents grasslands, oak savannas, and edges of mixed woodlands and lower elevation coniferous forests. Dominant plants associated with this species are the salt bush (*Atriplex* sp.), ephedra (*Ephedra* sp.), bladder pod (*Peritoma arborea*), goldenbush (*Isocoma* sp.), snakeweed (*Gutierrezia* sp.), and others. The squirrels live in small underground familial colonies in sandy, easily excavated soils in grasslands. There are two historical records of this species located within the Valley floor of Tulare County. This species could potentially occur on the fallowed or undeveloped land of the Program area.

Tipton Kangaroo Rat

The Tipton kangaroo rat (*Dipodomys nitratooides nitratooides*) is listed as a federally and State endangered species. Conservation guidelines are described in the *Recovery Plan for Upland Species of the San Joaquin Valley, California*.²³ This species is limited to arid-land communities occupying the Valley floor of Tulare Basin in level or nearly level terrain and within alluvial fan and floodplain soils ranging from fine sands to clay-sized particles with high salinity. Much of the occupied remnants of its range currently have one or more species of sparsely scattered woody shrubs and a ground cover of mostly introduced and native annual grasses and forbs (USFWS 1998). The Tipton kangaroo rat could potentially occur in small mammal burrows on the fallowed or undeveloped land of the Program area.

Tulare Grasshopper Mouse

The Tulare grasshopper mouse (*Onychomys torridus tularensis*) is a California Species of Special Concern. Conservation guidelines are described in the Recovery Plan for Upland Species of the San Joaquin Valley, California.²⁴ This species typically inhabits arid shrubland communities in hot, arid grassland and shrubland associations. It has also occurred in alkali sink, dominated by one or more saltbush species, iodine bush (*Allenrolfea occidentalis*), seepweed (*Suaeda* sp.), or goldenbush (*Ericameria* sp.), and in mesquite and saltbush scrub associations on the Valley floor. There are no historical records of Tulare grasshopper mouse occurring on the Valley floor of Tulare County, but this species could potentially occur in small mammal burrows on the fallowed or undeveloped Land of the Program area.

San Joaquin Kit Fox

The San Joaquin kit fox (*Vulpes macrotis mutica*) is listed as a federally endangered and State threatened species. Conservation guidelines are described in the Recovery Plan for Upland Species of the San Joaquin Valley, California.²⁵ The San Joaquin kit fox occurs in grasslands and scrublands in the San Joaquin Valley. It also occupies habitats that have been converted for agricultural production, oil exploration, or urbanization. It is known to utilize corridors along waterways as regional corridors, and agricultural fields for foraging purposes. There are 95 historical records of the San Joaquin kit fox occurring on the Valley floor of Tulare County. Due to the mobility of this species and its preferred foraging habitat, the San Joaquin kit fox could potentially occur within the Program area, particularly on the lands that are fallowed or undeveloped. The San Joaquin kit fox could modify small mammal burrows for occupation, or occur as a transient or forager. It could also potentially occur transiently on the disked or agriculturally developed parcels.

American Badger

The American badger (*Taxidea taxus*) is a California Species of Special Concern. The badger is known to occur in low densities scattered throughout grasslands and shrublands of the San Joaquin Valley. There are three historical records of the American badger occurring on the Valley floor of Tulare County. Due to the mobility of this species and its preferred foraging habitat, the American badger could potentially occur within the program area, particularly on the lands that are fallowed or undeveloped. The American badger could modify small mammal burrows for occupation, or occur as a transient or forager. It could also potentially occur transiently on the disked or agriculturally developed parcels.

CRITICAL HABITAT

The Endangered Species Act (*ESA*) requires the federal government to designate “critical habitat” for any species it lists under the *ESA*. Critical habitat designations have been established for the following ten species in Tulare County but Critical habitat for only six species occurs within the Valley floor of Tulare County:²⁶

- Vernal pool fairy shrimp (*Branchinecta lynchi*); *

- Vernal pool tadpole shrimp (*Lepidurus packardi*); *
- California tiger salamander, central population (*Ambystoma californiense*); *
- Little Kern golden trout (*Oncorhynchus aquabonita whitei*);
- Mountain-yellow-legged frog (*Rana muscosa*);
- California condor (*Gymnogyps californianus*); *
- Sierra Nevada bighorn sheep (*Ovis canadensis sierra*)
- Hoover's spurge (*Chamaesyce hooveri*); *
- San Joaquin Valley Orcutt grass (*Orcuttia inaequails*); * and
- Keck's checker-mallow (*Sidalcea keckii*).

A brief description of the Critical Habitat for each of the six species follows:

Vernal Pool Fairy Shrimp and Tadpole Shrimp *²⁷

Critical habitat for vernal pool fairy shrimp in Tulare County is generally located south and southwest of the city of Tulare and northwest of the city of Visalia. Critical habitat for vernal pool tadpole shrimp is located northwest of the City of Visalia. The total areas of Critical Habitat designated for vernal pool fairy shrimp and vernal pool tadpole shrimp within Tulare County are 24,285 acres and 7,579 acres, respectively. This represents less than three percent of all vernal pool fairy shrimp Critical Habitat and less than two percent of all vernal pool tadpole shrimp Critical Habitat designated within California and Oregon.

California Tiger Salamander, Central Population *²⁸

Critical Habitat in Tulare County for this species is generally located north and northwest of the City of Visalia. It is also found throughout the Central Valley, Southern San Joaquin, East Bay, and Central Coast Regions. Tulare County contains approximately 5,200 acres (1.25%) of designated Critical Habitat for the central population of the California tiger salamander.

California Condor

Critical Habitat for this species in Tulare County is generally located in the foothills and mountainous regions of Tulare County, extending into the easternmost portions of the Program area to the east of Highway 65. The total area designated as Critical Habitat for the California condor is approximately 152,000 acres.

Hoover's Spurge *²⁹

Critical habitat for this species in Tulare County is generally located northwest and northeast of the city of Visalia. The total area designated as Critical Habitat for Hoover's spurge is approximately 23,537 acres in Tulare County and a total of 145,383 acres in California and Oregon. The Critical Habitat areas within Tulare County are important because they support almost 20 percent of the known occurrences of Hoover's spurge.

San Joaquin Valley Orcutt Grass *

Critical Habitat for this species in Tulare County is generally located northwest and northeast of the City of Visalia. The total area designated as Critical Habitat for the species is approximately 15,243 acres in Tulare County and 197,367 acres in California and Oregon.

Other Sensitive Habitat Areas

Tulare Lake Basin

The Tulare Lake Basin is located in Kern, Kings, and Tulare Counties. Historically, Tulare Lake varied in size from 450 to 800 square miles and was known to become completely dry during drought years. The historical seasonal flooding of Tulare Lake and four other smaller lakes created an interconnected patchwork of aquatic, wetland, riparian forest, and valley oak savannah habitats. These wetlands were utilized for wintering or as a migratory stop for waterfowl. Most of the historic Tulare Lake Basin has been converted to agricultural land uses. Portions of the Pixley National Wildlife Refuge are located within the historic Tulare Lake Bed. This 6,000-acre refuge is located in southwestern Tulare County and contains grassland and wetlands habitats. This refuge was established to restore and protect wetland habitat for waterfowl. Approximately 4,392 acres of the refuge provide habitat for three endangered species, the San Joaquin Kit Fox, the Blunt-Nosed Leopard Lizard, and the Tipton Kangaroo rat.

Wetlands and Other Jurisdictional Waters

Wetlands exist throughout Tulare County. Both the federal and state governments have emphasized the importance of wetlands and other jurisdictional waters through the passage and implementation of the Clean Water Act and the Porter-Cologne Water Quality Act. Wetlands provide habitat for many plants and animals; they are essential in preserving the quality of surface waters and in recharging groundwater aquifers.

Tulare County contains a unique and threatened wetland-type known as vernal pools. Vernal pools are seasonally flooded depressions in the landscape that are underlain by subsurface soils that limit drainage. These pools are typically dry in the summer and inundated during parts of the winter. Depending on their depth and the quantities of rainfall, inundation can occur for a week to several months. The surrounding non-pool terrain that divides vernal pools typically exists in higher proportions than the areas that are actually inundated. Historically, vernal pools existed in native grassland prairie areas. Today, vernal pools exist in Tulare County in annual grassland and cultivated areas. It is estimated that 38,530 acres of vernal pools exist in Tulare County.³⁰ Vernal pools are generally addressed as an ecosystem. Because this ecosystem often occurs on relatively flat terrain, it is highly vulnerable to destruction from agriculture, heavy grazing, urbanization, brush clearing, and off-road vehicle use. The *USFWS* has designated critical habitat that typically protects large tracts of vernal pool areas, for several listed vernal pool species. The *USFWS* has designated a total of 36,357 acres in Tulare County as critical habitat for several listed vernal pool species.³¹

Federally and State-Protected Lands

Within Tulare County, there exist lands which have limitations on land uses, i.e. wildlife refuges, national parks, etc. These areas generally provide nursery sites, high quality habitat, corridors, and migratory stopping points for biological resources. Many of these areas are created to protect rare species and their ecosystems. A major refuge in the project area is:

Pixley National Wildlife Refuge³²

This is a 6,190-acre reserve of native grassland, marsh habitat and vernal pool habitat in the former Tulare Basin that is owned and managed by the *USFWS*. This reserve provides habitat for the vernal pool *fairy* shrimp, San Joaquin kit fox, Tipton kangaroo rat (*Dipodomys nitratooides nitratooides*), and the blunt-nosed leopard lizard and is a wintering area for migratory waterfowl.

Stone Corral Ecological Reserve³³

The 981-acre Stone Corral Ecological Reserve includes northern hardpan vernal pools and related habitats. Stone Corral provides winter and spring wetland habitat for waterfowl and shorebirds, and has the potential to support reintroduced native plant species.

Allensworth Ecological Reserve³⁴

The approximately 5,100-acre Allensworth Ecological Reserve consists of valley sink scrub and valley saltbush scrub habitat. Plants include iodine bush, goldenbush, atriplex, and San Joaquin saltbush. Animals include ground squirrels and coast horned lizards. The property was designated as an ecological reserve by the Fish and Game Commission in 1983. Past land uses include farming, grazing, non-toxic waste disposal, and subdivision for conceptual development.

Wetland Reserve Program Wetland Complex³⁵

The Wetlands Reserve Program includes 831.5 acres under easement in two parcels north of Alpaugh.

Atwell Island Land Retirement Demonstration Project

The Bureau of Land Management (BLM) owns and operates approximately 7,000 acres of land south of Alpaugh. BLM is restoring native valley grassland, a wetland, and alkali sink habitats on the area that for the past century was covered by fields of cotton, oats, and alfalfa. Atwell Island is currently supports some species of special-status animals including mountain plover, Tipton's kangaroo rat, and the San Joaquin kit fox, tricolored blackbird, burrowing owls, horned lizards, and the blunt-nosed leopard lizard.³⁶

Habitat Conservation Plans

The Kern Water Bank Habitat Conservation Plan (*KWBHCP*) is the only approved, governmental, habitat conservation plan (*HCP*) that exists in Tulare County. The *KWBHCP* was approved by the *USFWS* on October 2, 1997 and protects a total of 22 federally listed species and 29 non-listed species. The *HCP* covers a 19,900-acre area located in Tulare, Kern, and

Kings Counties. The species protected in this *HCP* included the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), California condor (*Glymmogyps californianus*), Conservancy fairy shrimp (*Branchinecta conservation*), San Joaquin kit fox, and western snowy plover (*Charadrius alexandrinus*).

Pacific Gas & Electric (*PG&E*) has adopted a multi-species Habitat Conservation Plan (*HCP*) for routine operation and maintenance (*O&M*) activities to comply with the federal and state Endangered Species Acts. The *HCP* is unique in that it primarily addresses small-scale temporary effects that are dispersed over a large geographic area. The purpose of the *HCP* is to enable *PG&E* to continue to conduct current and future *O&M* activities in the San Joaquin Valley while minimizing, avoiding, and compensating for possible direct, indirect, and cumulative adverse effects on threatened and endangered species that could result from such management activities. The Plan's permit duration is for 30 years.

Wildlife Migration Corridors

Several areas within Tulare County, predominately waterways and the riparian areas that border them, are utilized as migratory corridors for the movement of wildlife (including a variety of bird, mammal, and fish species). A Wildlife Movement Corridor is located along the east and southeast Valley edge and connects with several Essential Connectivity Areas including the Lone Oak Mountain – Tucker Mountain, Yokohl Valley/Oat Canyon, Lone Oak Mountain - Redwood Mountain/Pine Ridge, and Tennessee – Frazier Valley/Rocky Hill Ridge. Pixley National Wildlife Refuge - Cross Creek Essential Connectivity Area and two other Essential Connectivity Areas, McKittrick Valley - Pixley National Wildlife Refuge and Allensworth - Pixley National Wildlife Refuge, are located along the southwest Valley edge. These Connectivity Areas are interconnected by two Wildlife Linkage areas and are also linked to the Wildlife Movement Corridor.³⁷

IMPACTS

Impact #3.4.1 – Substantial Adverse Effect on Special Status Species: [Evaluation Criteria (a)]

Construction of new or expanded dairy and other bovine facilities, including Dairy *CAP GHG* reduction measures with construction impacts, could have direct impacts on special-status species through take or loss, or modification of their habitat. Special-status wildlife species could also be indirectly affected through modification of suitable habitat caused by night-time lighting habitat fragmentation, and other causes. Indirect water quality impacts to special status wildlife species could also result from increased erosion, sedimentation, temperature, and contamination associated with intensification of agricultural land uses.

Key special status species that may be affected by the proposed Program could include, but are not limited to, special status plants, California tiger salamander, blunt-nosed leopard lizard, Swainson's hawk, nesting raptors, burrowing owl, San Joaquin antelope squirrel, Tipton kangaroo rat, and San Joaquin kit fox. Potential impacts to special status plant species could include direct mortality to individuals through ground disturbance, vegetation removal, soil and ground water contamination, and habitat loss. Potential impacts to California tiger salamander,

blunt-nosed leopard lizard, burrowing owl, San Joaquin antelope squirrel, and Tipton kangaroo rat could include direct vehicle-related mortality to individuals and mortality through ground disturbance, vegetation removal, burrow collapsing or removal, micro-trash ingestion, poisoning, entrapment, soil and ground water contamination, and habitat loss. The proposed Program poses the risk of mortalities to individuals of key special status wildlife species from vehicle strikes and from entombment in collapsed dens or burrows. Entrapment in manmade structures and poisoning from ingestion of oil or antifreeze leaked from construction vehicles could also occur. Construction activities may have the potential to interfere with foraging and breeding behaviors of raptors and nesting birds and other wildlife species. Direct and indirect impacts of expanded or new dairy and other bovine facilities on special status species could be substantial.

Conclusion: Because the proposed Program would have substantial adverse effects on special status species, this impact is considered to be *significant*.

Mitigation Measure #3.4.1: Each new dairy/other bovine facility development or expansion shall be evaluated by a wildlife biologist. If special status species are potentially present and could be affected by project activities, the County will require assessments of potential habitat for special-status species on proposed projects sites. Special status wildlife species surveys shall be conducted by a qualified biologist according to appropriate *USFWS* or *DFW* protocol and special status plant surveys shall be conducted according to the latest version of the California Native Plant Society and *DFW* protocols for each special status species that potentially occurs. If special status species are determined to be present and subject to impacts from project construction or operation, the County will require avoidance or substantial reduction of impacts to that habitat through feasible alternatives or mitigation measures, including the establishment of buffer areas and compensatory mitigation where unavoidable losses of occupied habitat would occur. Mitigation measures will be developed consistent with applicable state and federal requirements. For those species for which published mitigation guidance exists, mitigation measures will follow the guidance provided in these publications or provide a similar level of protection. If previous published guidance does not exist, mitigation will be developed in consultation with the appropriate agencies (*USFWS* or *DFW*). The County will require project applicants to obtain any required incidental take permits prior to project implementation.

Mitigation approaches for specific special status species include the following:

- Special status plants: In areas where special status plant species potentially occur, follow *DFW* survey and evaluation guidelines.³⁸ Avoid special plant species where possible by delineation and observing at least a 50-foot no disturbance buffer.
- California tiger salamander: In areas with seasonal wetlands suitable for breeding habitat for the California tiger salamander conduct survey according to the *USFWS* 2003 protocol³⁹ or assume presence and either avoid take or apply for *ITP*.
- Blunt-nosed leopard lizard: Conduct protocol level-surveys⁴⁰ in suitable habitat (grassland and shrub scrub habitat with required habitat elements such as small mammal borrows), and avoid take since species is fully protected.

- Swainson’s hawk and nesting raptors: Conduct Swainson’s hawk protocol surveys⁴¹ and either avoid take or apply for *ITP*. Mitigate consistent with *DFW* recommendations.⁴²
- Burrowing owl: Conduct surveys for the western burrowing owl if project occurs within suitable burrowing owl habitat (e.g., fallowed agricultural lands, native lands, undisturbed lands, levees of canal banks) or is situated within 250 feet of burrowing owl habitat. If ground disturbance will occur within 250 feet of a burrowing owl or burrowing owl burrow avoid or mitigate consistent with *CDFW* guidelines.⁴³
- San Joaquin antelope squirrel, Tipton kangaroo rat, and San Joaquin kit fox: Conduct protocol-level surveys consistent with most recent survey protocols and either avoid take or apply for *ITP*. Mitigate consistent with *DFW* recommendations.⁴⁴

Significance after Mitigation: The imposition of the required mitigation measures will reduce the proposed Program impacts for new dairy and other bovine facilities, but they remain *significant* because mitigation may not reduce impacts to less-than-significant levels for all facilities.

Impact #3.4.2 – Substantial Adverse Effect on any Riparian Habitat or Other Sensitive Community:
[Evaluation Criteria (b)]

Construction of new or expanded dairy and other bovine facilities including Dairy *CAP GHG* reduction measures with construction impacts, could directly alter riparian habitat and other sensitive communities, or indirectly affect adjacent sensitive communities, through degrading habitat quality, directly affecting wildlife using those areas, or limiting habitat connectivity. These impacts could be substantial.

Riparian habitats are distributed within the Tulare County Valley floor, primarily along waterways, ditches, canals, and other agricultural irrigation infrastructure. The most notable areas of riparian habitat distribution are located along Deer Creek near Pixley National Wildlife Refuge in the southwest area of Tulare’s County Valley region, along the Kaweah River in the north part of the County, and along the Tule River in the east-central part of the County. Seven Sensitive Communities were identified by the *CNDDDB* as historically occurring within the Valley floor of Tulare County. They include Great Valley Oak Riparian Forest, Sycamore Alluvial Woodland, Northern Claypan Vernal Pool, Northern Hardpan Vernal Pool, Valley Sacaton Grassland, Valley Saltbush Scrub, and Valley Sink Scrub. Designated Critical Habitats for six special status species occur within the Valley floor of Tulare County. These include habitats for vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, California condor, Hoover’s spurge, and San Joaquin Valley Orcutt grass.

Conclusion: Because the proposed Program would have substantial adverse effects on sensitive natural communities, this impact is potentially *significant*.

Mitigation Measure #3.4.2: Applicants for expanded or new dairy and other facilities will retain a qualified biologist to document whether riparian habitats or other sensitive natural communities may occur on their project site and could be affected by project activities as part of their application, or whether offsite habitat areas could be significantly affected. If onsite sensitive natural communities are potentially present and could be affected by project activities or offsite habitat areas could be significantly affected, the County will require assessments by a qualified biologist, and avoidance or substantial reduction of impacts to sensitive natural communities through feasible alternatives or mitigation measures, including the establishment of appropriate buffer areas and compensatory mitigation where unavoidable losses would occur.

Significant impacts to any riparian habitat or sensitive natural community impact will be mitigated consistent with *USFWS* or *DFW* recommendations. *DFW* recommends a 200-foot no disturbance buffer for riparian vegetation delineated from the water body's high water mark.

Significance after Mitigation: The imposition of the required mitigation measures will reduce the proposed Program impacts for new dairy and other bovine facilities, but they remain *significant* because mitigation may not reduce impacts to less-than-significant levels for all facilities.

**Impact #3.4.3 – Substantial Adverse Effect on Wetlands and Jurisdictional Waters:
[Evaluation Criteria (c)]**

Construction of new or expanded dairy and other bovine facilities, including Dairy *CAP GHG* reduction measures with construction impacts, could adversely affect jurisdictional wetlands, waters of the U.S., and water of the state, including lakes and streambeds subject to *DFW* jurisdiction under Fish and Game Code Section 1600 *et seq.* The National Wetland Inventory (*NWI*) identified a total of 2,649 wetland features that have been historically documented within the Valley floor of Tulare County; however, only 1% of the *NWI*, on average, is updated each year. The Valley floor portion of Tulare County contains 2,726 blueline drainages that have been mapped by the Natural Resources Conservation Service (*NRCS*) or U.S. Geological Survey (*USGS*), but many of these features were interconnected. These features consist of waterways, ditches, canals, and other agricultural irrigation infrastructures. Of these, 136 blueline features represent significant waterways such as Tule River, Kaweah River, Saint Johns River, White River, Kings River, and various creeks.

Impacts could include damage to or death of wetland and riparian vegetation from the direct actions of construction within the actual permanent or construction footprint and include impacts from grading, paving, structures, clearing and grubbing, and landscaping. Impacts to regulated waters, including wetlands, would also occur if development resulted in the removal, filling, hydrological interruption, or other disturbance to these resources. These impacts could be substantial.

Conclusion: Because the proposed Program would have substantial adverse effects on wetlands and other jurisdictional waters, this impact is *significant*.

Mitigation Measures #3.4.3: Applicants for expanded or new dairy and other facilities will retain a qualified biologist or wetlands specialist to evaluate and document whether wetlands or other jurisdictional waters may occur on their project site and could be affected by project activities as part of their application. If they are potentially present and could be affected by project activities, the County will require formal wetlands delineations and assessments by a qualified wetlands specialist, and avoidance or substantial reduction of impacts to wetlands and other jurisdictional waters through feasible alternatives or mitigation measures, including appropriate buffer areas and compensatory mitigation where unavoidable losses would occur. Impacts to wetlands or jurisdictional waters will be mitigated in accord with *USFWS*, *DFW* and/or *ACOE* and *CVRWQCB* requirements. *DFW* recommends that wetlands impacts be mitigated on a minimum of an acre-for-acre basis, and that no-disturbance buffers be established 200 feet from the high water mark of jurisdictional waters and 250 feet from the high water mark of vernal pools and swales.⁴⁵

The County will require project applicants to obtain and submit copies of any required permits (e.g., Section 404, Waste Discharge Requirements, and streambed alteration agreements) prior to project implementation.

Significance after Mitigation: The imposition of the required mitigation measures will reduce the proposed Program impacts for new dairy and other bovine facilities, but they remain *significant* because mitigation may not reduce impacts to less-than-significant levels for all facilities.

Impact #3.4.4 – Substantially Interfere with the Movement of Fish or Wildlife or Impede Wildlife Corridors, or Disturb Wildlife Nursery Sites:
[Evaluation Criteria (d)]

Several areas within the Program area, predominately waterways and the riparian areas that border them are utilized as migratory corridors for the movement of wildlife, including a variety of bird, mammal, and fish species. Construction of new or expanded dairy and other bovine facilities, including Dairy *CAP GHG* reduction measures with construction impacts, could affect habitats through direct conversion to intensive agricultural use and could result in indirect impacts that result in habitat degradation, habitat fragmentation, and encroachment by exotic weeds. These direct and indirect impacts to habitats have potential to remove or interfere with existing linkages between habitat areas currently providing cover and could increase the distance that animals would need to traverse. Additionally, expanded or new dairies and other bovine facilities would also cause an increase in both vehicular traffic levels and nighttime light levels, which would also serve to deter wildlife movement in the area. These impacts could cause substantial interference with fish or wildlife movement and with established wildlife corridors.

Conclusion: Because the proposed Program would substantially interfere with fish or wildlife migration and with established wildlife corridors, this impact is *significant*.

Mitigation Measures #3.4.4: Applicants for expanded or new dairy and other facilities will retain a qualified wildlife biologist to evaluate and document whether fish or wildlife movement, corridors or nurseries could be affected as part of their application. If they could be affected, the

County will require assessments by a qualified biologist, and avoidance or substantial reduction of impacts through feasible alternatives or mitigation measures. These include providing buffer zones adjacent to identified wildlife corridors, using native plant landscaping within a least 200 feet identified wildlife corridors, using shielded or direct lighting in areas near identified wildlife corridors, and installing physical barriers such as fencing to prevent animal and human entry into identified wildlife corridors.

Significance after Mitigation: : The imposition of the required mitigation measures will reduce the proposed Program impacts for new dairy and other bovine facilities, but they remain *significant* because mitigation may not reduce impacts to less-than-significant levels for all facilities..

Impact #3.4.5 – Conflict with any Local Policies or Ordinances Protecting Biological Resources:

[Evaluation Criteria (e)]

The Tulare County General Plan⁴⁶ Environmental Resources Management Element contains numerous policies to protect the biological resources within the County. The proposed Program has been designed to be consistent with these policies, and therefore there are no conflicts. The County has no adopted ordinances specifically protecting biological resources.

Conclusion: The proposed Program impacts are *less than significant*.

Mitigation Measures: None are required.

Impact #3.4.6 – Habitat Conservation Plan or Other Plan Conflicts:

[Evaluation Criteria (f)]

Neither the County of Tulare, nor its cities, has adopted a *HCP* or other local conservation plan. Pacific Gas and Electric Company (*PG&E*) has, however, adopted a *HCP* for its Valley facilities, including those in Tulare County. The *HCP* governs potential habitat impacts caused by *PG&E* facilities or their maintenance. Activities under the proposed Program would therefore not conflict with the *PG&E HCP*. The Kern Water Bank *HCP*, which is confined to Kern County near Bakersfield, can be amended to allow for that *HCP* to extend legal coverage to other, non-related projects. To qualify for coverage, a project would need to be situated in Kern, Kings, or Tulare counties, the United States Fish and Wildlife Service would need to agree to amend the *HCP* for the specific project, and conservation credits for the project would need to be purchased from the Kern Water Bank. Activities under the proposed Program would not conflict with the Kern Water Bank *HCP*.

Conclusion: The *PG&E HCP* nor the Kern Habitat Conservation Plan would be adversely affected by the proposed Program. The impact is therefore *less than significant*.

Mitigation Measures: None are required.

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- ³⁸ Department of Fish and Game. 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities.
- ³⁹ US Fish and Wildlife Service. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander.
- ⁴⁰ Department of Fish and Game. 2004. Approved Survey Methodology for the Blunt-Nose leopard Lizard.
- ⁴¹ Swainson's Hawk technical Advisory Committee. 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California Central Valley.
- ⁴² Department of Fish and Game. 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo Swainsoni*) in the Central Valley of California.
- ⁴³ Department of Fish and Game. 1995. Staff Report on Burrowing Owl Mitigation.
- ⁴⁴ Department of Fish and Game. 2011. Letter to Michael C. Spata re NOP for ACFP and Ordinance Amendment.
- ⁴⁵ Department of Fish and Game. 2011. Letter to Michael C. Spata re NOP for ACFP and Ordinance Amendment.
- ⁴⁶ County of Tulare. 2012. 2030 Update: Tulare County General Plan.

3.5 Cultural Resources

INTRODUCTION

This section evaluates the proposed Program's potential impacts on a variety of cultural resources in Tulare County. The environmental setting provides a summary of known resources in the County and includes a timeline of key events. Impacts and mitigation measures are then presented.

IMPACT EVALUATION CRITERIA

CEQA Evaluation criteria for cultural resources impacts are:

Would the project:

- a) *Cause a substantial adverse change in the significance of an historical resource as defined in Section 15064.5?*
- b) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?*
- c) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*
- d) *Disturb any human remains, including those interred outside of formal cemeteries?*

Virtually any physical evidence of past human activity can be considered a cultural resource, although not all such resources are considered to be significant. They often provide the only means of reconstructing the human history of a given site or region, particularly where there is no written history of that area or that period. Subsequently, their significance is judged largely in terms of their historical or archaeological interpretive values. Along with research values, cultural resources can be significant, in part, for their aesthetic, educational, cultural, and religious values.

REGULATORY SETTING

The following environmental and regulatory settings were summarized, in part, from information contained in the Tulare County General Plan 2010 Background Report.¹

Federal Regulations

Secretary of the Interior's Standards

The Secretary of the Interior is responsible for establishing professional standards and providing guidance related to the preservation and protection of all cultural resources listed in, or eligible for, listing in the National Register of Historic Places. The Secretary of the Interior's Standards

for the Treatment of Historic Properties apply to all grant-in-aid projects assisted through the National Historic Preservation Fund, and are intended to be applied to a wide variety of resource types, including buildings, structures, sites, objects, and districts. The treatment standards, developed in 1992, were codified as 36 *CFR* 68 entitled, “The Secretary of the Interior’s Standards for Historic Preservation Projects.” The standards address four treatments:

- Preservation focuses on the maintenance and repair of existing historic materials and retention of a property’s form as it has evolved over time (protection and treatment are included in this focus area);
- Rehabilitation as a treatment focuses on the repair and replacement of deteriorated features; when alterations or additions to the property are planned for a new or continued use; and when a depiction of a property at a particular point in time is not appropriate;
- Restoration is the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time through the removal of features from other periods in its history and reconstruction of missing features from the reconstruction period; and
- Reconstruction addresses those aspects of treatment necessary to re-create an entire non-surviving building with new material.

State Regulations

California Environmental Quality Act (CEQA)

Section 15064.5(b) of the *CEQA* Guidelines states that “a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.” *CEQA* Guidelines Section 15064.5(a) defines a “historical resource” as including the following:

- A resource listed in, or eligible for listing in, the California Register of Historical Resources;
- A resource listed in a local register of historical resources, as defined at Public Resources Code Section 5020.1k;
- A resource identified as significant in a historical resources survey meeting the requirements of Public Resources Code Section 5024.1(g); or
- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.

If the cultural resource in question is an archaeological site, *CEQA* Guidelines Section 15064.5(c)(1) requires that the lead agency first determine if the site is a “historical resource” as

defined above. If the site qualifies as a historical resource, potential adverse impacts must be considered in the same manner as a historical resource.

If the archaeological site does not qualify as a historical resource but does qualify as a “unique archaeological resource,” then the archaeological site is treated in accordance with Public Resources Code Section 21083.2 (*CEQA* Guidelines Section 15064.5(c)(3)). In practice, most archaeological sites that meet the definition of a unique archaeological resource will also meet the definition of a historical resource. A “unique archaeological resource” is defined in Public Resources Code Section 21083.2(g) as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it:

- Contains information needed to answer important scientific research questions, and there is public information in that information;
- Has a special and particular quality, such as being the oldest or best example of its type; and/or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Section 15064.5(b)(4) of the *CEQA* Guidelines states, “A lead agency shall identify potentially feasible measures to mitigate significant adverse changes in the significance of an historical resource. The lead agency shall ensure that any adopted measures to mitigate or avoid significant adverse changes are fully enforceable through permit conditions, agreements, or other measures.” If avoidance is not feasible, an excavation program or some other form of mitigation must be developed to mitigate the impacts. In order to adequately address the level of potential impacts, and thereby design appropriate mitigation measures, the significance and nature of the cultural resources must be determined.

If significant resources are identified, there are several ways to treat and mitigate impacts to these resources, including: avoidance; site capping (in those instances where avoidance is not feasible, it is often possible to cover burials or other important discoveries with a protective layer of earth or other material); creation of conservation easements; and/or data recovery. Section 15064.5(b)(3) of the *CEQA* Guidelines states: “Generally, a project that follows the Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior’s Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995), Weeks and Grimmer, shall be considered as mitigated to a level of less than a significant impact on the historical resource.”

*Native American Consultation*²

Senate Bill 18 (*SB 18*) requires local governments to consult directly with Native American tribes before making certain planning decisions and to provide notice to tribes at certain key points in the planning process. The purpose of involving tribes at early planning stages is to

allow consideration of cultural places in the context of broad local land use policy, before individual site-specific project-level land use designations are made by a local government. The consultation requirements of *SB 18* apply to general plan or specific plan processes proposed on or after March 1, 2005. The following are the contact and notification responsibilities of local governments:

- Prior to the adoption or any amendment of a general plan or specific plan, a local government must notify the appropriate tribes (on the contact list maintained by the Native American Heritage Commission (*NAHC*)) of the opportunity to conduct consultations for the purpose of preserving, or mitigating impacts to, cultural places located on land within the local government's jurisdiction that is affected by the proposed plan adoption or amendment. Tribes have 90 days from the date on which they receive notification to request consultation, unless a shorter timeframe has been agreed to by the tribe, per Government Code §65352.3.
- Local government must send a notice of a public hearing, at least 10 days prior to the hearing, to tribes who have filed a written request for such notice, per Government Code §65092.

Since the revised ACFP is a General Plan amendment, Tulare County will be implementing the above *SB 18* consultation requirements.

State Laws Pertaining to Human Remains

Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the County coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission Public Resources Code Section 5097.98 specifies the procedures to be followed in case of the discovery of human remains on non-federal land. The disposition of Native American burials is within the jurisdiction of the Native American Heritage Commission.

Local Regulations

There are no County regulations governing paleontological or cultural resources.

ENVIRONMENTAL SETTING

Paleontologic Setting

The following description is summarized from “*The San Joaquin Valley Through Time*,” by Tim Elam,³ and the Buena Vista Museum of Natural History, Bakersfield, California website. During the Tertiary Period (65 to 2 million years ago [*mya*]), the Sierra Nevada Mountains had eroded to mere hills compared to earlier form, and the Coast Ranges rose. This gave way to the formation of the San Joaquin Valley, which comprises the southern portion of the Great Central Valley, an interior lowland approximately 450 miles long and on average about 40 miles wide. The Great Central Valley is enclosed by the Siskiyou, Sierra Nevada, Tehachapi, and Coast Ranges on the north, east, south, and west, respectively. The Sierra Nevada is an island arc volcano system that

formed about 200 million years ago during the Jurassic Period (144-208 *mya*). During this time, the area that would become the San Joaquin Valley lay off shore several thousand feet below the surface of the Pacific Ocean. Sediment from the Sierra Nevada, and the movement of the earth's plates (tectonic action) facilitated the accumulation of material into the Late Cretaceous Period (65-75 *mya*).

The Jurassic and Cretaceous Periods brought flowering plants and early dinosaurs, along with the first birds and mammals. The basic form of the Great Central Valley rose during the Cenozoic period from the Pacific Ocean, first as islands, then as mountains attached to the ocean valleys below them. The Paleocene Period (58-66 *mya*) witnessed the extinction of the dinosaur and the development, and later, dominance of the mammal.

During the Eocene Epoch (53-39 *mya*), the western edges of the San Joaquin Valley rose above sea level for the first time. Sedimentation and uplift of geological formations continued until two million years ago. In the Holocene Epoch (10,000 years to present), humans entered the area. Fresh water lakes, rivers, and thousands of feet of rich alluvium formed the valley floor.

According to the University of California Museum of Paleontology (*UCMP*), 12 paleontological resources have been recorded in Tulare County, generally within the valley portion of the County. These resources primarily consist of invertebrate, vertebrate, and plant fossils.⁴

Prehistoric Setting

Although a relatively small amount of information is known concerning the earliest occupants of the Tulare County region, it is clear that much of the San Joaquin Valley and Sierra foothills have been occupied throughout most of the Holocene Epoch (10,000 *B.P.* [Before Present] to the present). The reconstruction of cultures inhabiting the subject area during the late Paleo-Indian to early Archaic Periods (-9,000 *B.P.* to 3,000 *B.P.*) has proven difficult based on erosion and depositional patterns of the Valley. Over the millennia, these processes have re-deposited or deeply buried the evidence of much of those early cultures.

A number of investigations into San Joaquin Valley prehistory have been conducted in Tulare County. Much of the literature has supported the notion that the inhabitants of the San Joaquin Valley maintained fairly dense populations situated along the banks of major waterways, wetlands, and streams. Although many sites are more obvious, many of the earliest archaeological records for the region have likely been buried beneath the vast alluvial deposits created by erosion and depositional processes indicative of the valley and Sierra foothills, especially over the last 9,000 years.

Ethnohistoric Setting

Tulare County was inhabited by indigenous California Native American groups consisting of the Southern Valley Yokuts, Foothill Yokuts, Monache, and Tubatulabal. Most information regarding these groups is based on Spanish government and Franciscan mission records of the 18th and 19th centuries, and in studies conducted during the 1900s to 1930s by American and British ethnographers. The ethnographic setting presented below is derived from the early works,

compiled by W. J. Wallace, Robert F.G. Spier, and Charles R. Smith,⁵ with statistical information provided by the California Native American Heritage Commission.

Of the four main groups inhabiting the Tulare County area, the Southern Valley Yokuts occupied the largest territory, which is defined roughly by the crest of the Diablo Range on the west and the foothills of the Sierra Nevada on the east, and from the Kings River on the north, to the Tehachapi Mountains on the south. The Foothill Yokuts inhabited the western slopes of the Sierra Nevada, between the Fresno River and Kern River, with settlements generally occurring between the 2,000 to 4,000-foot elevations. The Tubatulabal inhabited the Sierra Nevada Mountains, at the higher elevations, near Mt. Whitney in the east, extending westward along the drainages of the Kern River, and the Kern River-South Fork. The Monache were comprised of six small groups that lived in the Sierras east of the Foothill Yokuts, in locations ranging between 3,000 to 7,000 foot elevations.

Historical Setting

California's coast was initially explored by Spanish and some Russian military expeditions during the late 1500s. However, European settlement did not occur until the arrival into southern California of land-based expeditions originating in Spanish Mexico. The early groups arrived during the 1760s, and consisted of Spanish military, Mexican Indians, Franciscan missionaries, and citizen colonists. Thus began what is today known as the Spanish Period (1769-1822). This period includes the establishment of a chain of 21 Franciscan missions, constructed in old California, from San Diego to Sonoma. With the establishment of the missions came the exertion of Spanish religious and military authority over California's indigenous population, and the development of presidios, civilian ranchos, and pueblos throughout California. Although the region known today as Tulare County did not come under the jurisdiction of a mission proper, periodically small numbers of indigenous tribal members fleeing the control of distant missions would enter the valley.

In 1822, the colonial territory of Mexico won its independence from Spain, and established a republic. Because it lay strategically situated within the new republic's northern frontier, California remained a territory of Mexico, and home to a new group of ranchers and settlers that arrived to take advantage of large land grants being offered by the new government. During the 1840s, Mexico awarded five grants (known as ranchos) on what later became Tulare County lands. However, in 1860, Kern County was formed from a portion of Tulare County; all five Tulare County ranchos were included within the new Kern County boundaries.

In 1846, hostilities between Mexico and the United States led to war. Two years later (1848), war ended, and the United States and Mexico signed the Treaty of Guadalupe Hidalgo. As part of the post-war arrangements, Mexico ceded California and the Southwest to the United States. In 1848- 1849, the discovery of gold in northern California brought tens of thousands of itinerant miners, merchants, and speculators. By 1850, the huge influx of prospective citizens allowed California to skip the usual stage of territorial status, and enter the union as a state. Two years later (1852), Tulare County was formed from the southern portion of Mariposa County. And, although Tulare County is listed today as the seventh largest of California's 58 counties

(containing approximately 4,840 square miles), several other counties were subsequently carved from Tulare, including Fresno (1856), Kern (1860), Inyo (1866), and Kings Counties (1893).

Early settlement in the Tulare County area focused on ranching. In 1872, the Southern Pacific Railroad entered Tulare County, connecting the San Joaquin Valley with markets in the north and east. About the same time, valley settlers constructed a series of water conveyance systems (canals, dams, and ditches) across the San Joaquin Valley. With ample water supplies and the assurance of rail transport for commodities such as grain, row, crops, and fruit, a number of farming colonies soon appeared throughout the region. Colonies such as Mt. Whitney, Orosi, Oakview, Holliday, Vina, and McCall's offered affordable farmland, water, and modern transportation. The colonies grew to become cities such as Tulare, Visalia, Porterville, and Hanford. Visalia, the County seat, became the service, processing, and distribution center for the growing number of farms, dairies, and cattle ranches. By 1900, Tulare County boasted a population of about 18,000. New transportation links such as Highway 99 (completed during the 1950s), affordable housing, light industry, and agricultural commerce brought steady growth to the entire San Joaquin Valley area, and corresponding impacts to the County's cultural and Historical resources.

Existing Cultural and Historic Resources

Tulare County's known and recorded cultural resources may be identified through historical records, such as those found in the National Register of Historic Places, the Historic American Building Survey/Historic American Engineering Record (*HABS/HAER*), the California Register of Historic Resources, California Historical Landmarks, and the Tulare County Historical Society list of historic resources.

Due to the sensitivity of many prehistoric, ethnohistoric, and historic archaeological sites, the resources listed in the following table (Table 3.5-1) include only data available to the general public. The Information Center at California State University Bakersfield houses records associated with reported cultural resources surveys, including the records pertinent to sensitive sites. Only qualified professionals can access the records and other responsible parties such as selected representatives of the region's Native American community. Sensitive sites include burial grounds, important village sites, and other buried historical resources protected under State and federal laws. The San Joaquin Valley is rich in such sites.⁶

**Table 3.5-1
Historic Properties in Tulare County**

Site/Building	Location	Year Constructed	Historical Landmark Designation	National Register Status
First Tule River Indian Reservation	Alta Vista School, Porterville	1857	CA SHL No. 388/TCHS HS	Not Applicable
Charter Oak/Election Tree	Charter Oak Dr., 7 mi East of Visalia	1852	CA SHL No. 410/TCHS HS	Not Applicable
Tailholt Gold Mining Camp	County Hwy, M109, 8.0 mi S. Fountain Springs	1856	CA SHL No. 413/TCHS HS	Not Applicable
Butterfield Stage Route	SW Corner Hermosa St and SR 65, 1 mi W of Lindsay	1858	CA SHL No. 471/TCHS HS	Not Applicable
Tule River Stage Station	Porterville Public Park	1854	CA SHL No. 473	Not Applicable
Fountain Springs	Junction Co. Rd. J22/M109	1858	CA SHL No. 648/TCHS HS	Not Applicable
Temporary Detention Camps for Japanese-Americans	Tulare Co. Fairgrounds	1942	CA SHL No. 934	Not Applicable
Commercial and Savings Bank/Bank of America Building	343 East Main St	1915	Non	Listed in NR as Individual Property
Allensworth Historic District	SR 43, Allensworth	1908-1912	Not Applicable	Listed in NRHP as district
Ash Mountain Entrance Sign	N of Three Rivers in Sequoia National Park	1925	Not Applicable	Listed in NRHP
Bank of Italy Building	128 E. Main St., Visalia	1900-1924	Not Applicable	Listed in NRHP as building
Barton-Lackey Cabin	N of Mineral King, in Kings Cyn. Nat. Park	1900	Not Applicable	Listed in NRHP
Cattle Cabin	NE of Three Rivers in Sequoia Nat. Park	1875	Not Applicable	Listed in NRHP
Elster, C.A. Building	SR 190 and Tule River Dr., Springville	1912	Not Applicable	Listed in NRHP
Exeter Public Library	Exeter	1900-1924	Not Applicable	Listed in NRHP as building
Giant Forest Lodge Historic District	NE of Three Rivers in Sequoia Nat. Park	1900-1924	Not Applicable	Listed in NRHP as district
Giant Forest Village – Camp Kaweah Historic District	N of Three Rivers in Sequoia Nat. Park	1886-1924	HABS/TCHS Historical Site	Listed in NRHP as district
Groenfeldt Site	Address Restricted	1000-2999BC	Not Applicable	Listed in NRHP
Hockett Meadow Ranger Station	S. of Silver City in Sequoia Nat. Park	1925-1949	Not Applicable	Listed in NRHP
Hospital Rock	Address Restricted	1499-1000AD	Not Applicable	Listed in NRHP
Hyde House	500 S. Court St., Three Rivers	1875	Not Applicable	Listed in NRHP
Moro Rock Stairway	N. of Three Rivers in Sequoia Nat. park	1925-1949	Not Applicable	Listed in NRHP
Orosi Branch Library	12662 Ave. 416, Orosi	1900-1924	Not Applicable	Listed in NRHP as building
Peak Lake Ski Hut	N. of Mineral King in Sequoia Nat. Park	1925-1949	Not Applicable	Listed in NRHP as building
Pogue Hotel	32792 Sierra Dr., Lemoncove	1879	TCHS HS	Listed in NRHP as building
Quinn Ranger Station	S. of Mineral King on Sequoia Nat. Park	1900-1924	Not Applicable	Listed in NRHP as building

Site/Building	Location	Year Constructed	Historical Landmark Designation	National Register Status
Redwood Meadow Ranger Station	NE of Three Rivers in Sequoia Nat. Park	1925-1949	Not Applicable	Listed in NRHP as building
Sequoia Field – Visalia – Dinuba School of Aeronautics	Jct. of Ave. 368 and Road 112, 9 mi N. of Visalia	1925	Not Applicable	Listed in NRHP as building
Shorty Lovelace Historic District	E. of Pinehurst on Kings Cyn. Nat. Park	1900-1949	Not Applicable	Listed in NRHP as district
Smithsonian Institution Shelter Squatter’s Cabin	W. of Lone Pine in Sequoia Nat. Park NE of Three Rivers, Three Rivers	1900-1924 1875	Not Applicable Not Applicable	Listed in NRHP Listed in NRHP as building
Tenalu	Address Restricted	1925-1949	Not Applicable	Listed in NRHP
Tharp’s Log	NE of Three Rivers, Three Rivers	1850-1874	Not Applicable	Listed in NRHP
The Pioneer	27000 S. Mooney Blvd., Visalia	1900-1924	Not Applicable	Listed in NRHP as building
Tulare Union High School Auditorium and Administration Building	755 E. Tulare Ave., Tulare	1925-1949	Not Applicable	Listed in NRHP as building
US Post Office, Porterville Main	65 W. Mill Ave., Porterville	1925-1949	Not Applicable	Listed in NRHP as building
US Post Office, Visalia Downtown Center Station	11 W. Acequia St., Visalia	1925-1949	Not Applicable	Listed in NRHP as building
Wilsonia Historic District	Roughly bounded by Pine Ln., Fern Ln., Hillcrest Rd., Sierra Ln., Kaweah Ln., Goddard Ln., and Park Rd.	1900-1924	Not Applicable	Listed in NRHP as district
Zalud House	393 N. Hockett St.	1875-1899	Not Applicable	Listed in NRHP as building
Cabin Creek Ranger Residence and Dormitory	SE of Wilsonia on General’s Highway in Sequoia Nat. Park	1935	Not Applicable	Listed in NRHP as building
First Congregational Church	165 E. Mill St., Porterville	1909	Not Applicable	Listed in NRHP as building
General’s Highway Stone Bridges	N. of Mineral King in Sequoia Nat. Park	1931	Not Applicable	Listed in NRHP as building
Mineral King Road Cultural Landscape	Mineral King Rd., Sequoia Nat. Park	1926	Not Applicable	Listed in NRHP as building
Porterville Flour Mill		1868	TCHS HS	Not Applicable
Butterfield Overland Mail Route	7 mi. E. of Ducor	1855	TCHS HS	Not Applicable
Fremont Trail	W. of Lindsay	1844	TCHS HS	Not Applicable
Mooney Grove	RE Kaweah Delta	1852	TCHS HS	Not Applicable
Jordan Trail	Yokohl Rd., near SR 198	1861	TCHS HS	Not Applicable
George S. Berry Marker	Lindsay High School	1880s	TCHS HS	Not Applicable
Hog Wallow Preserve	Ave. 314/Rd. 220, Exeter	n.d.	TCHS HS	Not Applicable
Fort Visalia	Garden, between School and Oak Streets	1852	TCHS HS	Not Applicable
Woodville School Marker	Woodville Memorial Bld.	n.d.	TCHS HS	Not Applicable
Lone Oak Cemetery	Ave. 324, off Rd. 168, Eat of Ivanhoe	n.d.	TCHS HS	Not Applicable
Plano Marker	Former site of Plano	1861	TCHS HS	Not Applicable

Site/Building	Location	Year Constructed	Historical Landmark Designation	National Register Status
Old State Road	Ave. 56, Fountain Springs	n.d.	TCHS HS	Not Applicable
Ina Stiner Home	“E” St., Porterville	n.d.	TCHS HS	Not Applicable
Klink Station Marker	Ivanhoe	n.d.	TCHS HS	Not Applicable
Artesian Well, Pixley	S. of Waukena	CA 1880s	TCHS HS	Not Applicable
Wilcox Family Monument	Lake Success, Porterville	n.d.	TCHS HS	Not Applicable
Allen I. Russel Tree	Balch Park	1961	TCHS HS	Not Applicable
Liberty Elementary School	Mooney Blvd., Visalia	n.d.	TCHS HS	Not Applicable
Kern Street Commercial Buildings	Tulare		HABS	Not Applicable
Tule River Hydroelectric Complex	SR 90, Tulare	1902	HABS	Not Applicable
General’s Highway	Three Rivers	1921	HAER	Not Applicable
Marble Fork Bridge	Kaweah River, Three Rivers	1919	HAER	Not Applicable
Pumpkin Hollow Bridge	Kaweah River, Three Rivers	1922	HAER	Not Applicable
General Grant National Historic District	Kings Canyon National Park, Wilsonia	n.d.	Not Applicable	Listed in NRHP as district

CA SHL – California State Historic Landmark

NRHP – National Register of Historic Places

HABS/HAER – Historic American Building/Survey/Historic American Engineering Record (National Park Service)

TCHS HS – Tulare County Historical Society Historical Site

n.d. – No Date

Source: Tulare County. 2010. Recirculated Draft EIR, Tulare County General Plan, Table 3.12- 2008 data.

IMPACTS

Impact #3.5.1 - Disturbance of Historical or Archeological Resources: [Evaluation Criteria (a), (b)]

Excavation, grading, trenching, or other sub-surface disturbance associated with construction of expanded or new dairies and other bovine facilities, including Dairy CAP GHG reduction measures with construction impacts, could damage or destroy buried archaeological resources. Project construction could also adversely affect historical buildings.

As listed in Table 3.5-1 there are 67 historic properties in Tulare County. Thirty-eight of these sites are located adjacent to, or within the foothill and mountain regions of the County. Another 25 sites are buildings or sites within urban areas or parks; of the remaining four sites, locations were restricted or not provided.

Locations of archaeological resource sites are not publicized to prevent unwanted theft or vandalism. Construction of new or expanding dairies and feedlots could damage or destroy archeological resources.

Conclusion: Construction activities associated with new or expanding dairies will have an adverse impact on historical properties, due to the unlisted location of many historic properties. Because the proposed Program could cause a substantial adverse change in the significance of CEQA Guidelines-defined historical and archeological resources, this impact is *significant*.

Mitigation Measure #3.5.1: Applicants for expanded or new dairy and other bovine facilities will retain a qualified archeologist to conduct a cultural resource records search for each new or expanded dairy facilities site. Based on that records search, the applicant will retain a qualified archeologist to prepare an inventory report and evaluation of significance if the search discloses the likelihood of significant historical or archeological resources, and the County will consult with the Native American Heritage Commission, and, for projects require additional CEQA review, with Native American tribes as required by AB 52. The County will require the applicant to implement appropriate mitigation measures as consistent with CEQA Guidelines Section 15126.4(b), including compliance with the Secretary of Interior's standards for historic buildings, and for archeological resources preservation in place if feasible or data recovery if preservation in place is not feasible.

If there is no recorded evidence of historical or archaeological sites on the project site, the possibility remains that resources may exist. If, in the course of project construction any archaeological or historical resources are uncovered, discovered, or otherwise detected or observed, the applicant will immediately cease activities within 50 feet of the find area shall. The applicant will contact a qualified archaeologist to evaluate the find and advise the County of Tulare of the resource's significance. If the County's Environmental Assessment Officer determines that the resource is significant, the County will require the applicant to implement appropriate mitigation measures as defined by CEQA Guidelines Section 15126.4(b).

Significance after Mitigation: The implementation of the described Mitigation Measure will reduce the proposed Program impact to *less than significant* because impacts to cultural resources would be avoided or substantially lessened.

**Impact #3.5.2 - Destruction of Paleontological Resources or Geologic Feature:
[Evaluation Criteria (c)]**

The destruction of a unique paleontological resource or unique geologic feature constitutes a significant impact under *CEQA*. There are no unique geological features in the Valley floor Program area.

Paleontological resources include fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. Treatment of paleontological resources is generally similar to treatment of cultural resources, requiring evaluation of the resources in a project's area of potential affect, assessment of potential impacts on significant or unique resources, and development of mitigation measures to reduce or eliminate potentially significant impacts. Excavation, grading, trenching, or other sub-surface disturbance associated with expanded or new dairy and other bovine facilities, including Dairy *CAP GHG* reduction measures with construction impacts, could damage or destroy paleontological resources.

Records of the location of paleontological resources which have been encountered in the County are limited. It is, in addition to the review of such records, necessary to rely upon the memories of existing or former County staff, project-site neighbors, or local geologists for information.

Conclusion: Because the proposed Program could destroy unique paleontological resources, this impact is *significant*.

Mitigation Measure #3.5.2: Even if there is no record evidence of paleontological sites on new or expanding dairy and other bovine facility sites, the possibility remains that resources exist. If, in the course of project construction including construction of Dairy *CAP GHG* reduction measures with construction impacts, any paleontological resources are uncovered, discovered, or otherwise detected or observed, the applicant will immediately cease activities within 50 feet of the find area. The applicant will contact a qualified paleontologist to evaluate the find and advise the County of Tulare of the resource's significance. If the County's Environmental Assessment Officer determines the resource is significant, the County will require the applicant to implement appropriate mitigation measures such as excavation and transfer to a museum will be required prior to any resumption of work in the affected area of the project.

Significance after Mitigation: The proposed Program impact, as mitigated, is *less than significant* because impacts to paleontological resources would be avoided or substantially lessened.

**Impact #3.5.3 – Disturbance of Human Remains:
[Evaluation Criteria (d)]**

Native American burial grounds are located throughout the Southern San Joaquin Valley. Excavation, grading, trenching, or other sub-surface disturbance associated with expanded or new dairy and other bovine facilities, including Dairy *CAP GHG* reduction measures with construction impacts, could disturb Native American or other human remains.

Conclusion: Because the proposed Program could disturb human remains, this impact is *significant*.

Mitigation Measure #3.5.3: The County will not allow construction of dairies or bovine facilities on areas identified or identifiable as former cemeteries or burial grounds. If, in the course of future project construction or operation, any skeletal remains are uncovered, discovered, or otherwise detected or observed, the applicant will immediately cease activities in the affected area and the County will require compliance with Health & Safety Code Section 7050.5 and Public Resources Code Section 5097.98. The applicant will consult a qualified archaeologist, the County’s Environmental Assessment Officer, the County Coroner and local Native American organizations, and the County will require appropriate measures that may include avoidance of disturbance at the burial site or dignified reburial of the remains.

Significance after Mitigation: The measure will assure that appropriate procedures are followed with respect to unidentified skeletal remains or Native American burial grounds and that any Native American burial sites or skeletal remains encountered are protected, avoided, treated in accordance with the recommendations of the most likely descendent (for Native American remains), or relocated. The proposed Program impact after mitigation is thus *less than significant*.

REFERENCES

¹ County of Tulare. 2010. General Plan Background Report. <http://generalplan.co.tulare.ca.us>

² AB 52 of 2014 establishes additional requirements for Native American consultation during the CEQA process. However, it applies only to projects that have a Notice of Preparation (NOP) filed on or after July 1, 2015. The NOP for the proposed Program was filed on November 30, 2011.

³ The San Joaquin Valley Trough Time http://www.sharktoothhill.org/index/fuseaction=news_full_view Accessed site 1/12/16.

⁴ County of Tulare, 2010 General Background Report, page 9-53. Tulare County, CA. <http://generalplan.co.tulare.ca.us>

⁵ County of Tulare. 2010. General Plan Background Report. Page 9-54. Tulare County, CA. <http://generalplan.co.tulare.ca.us>

⁶ Tulare County General Plan Recirculated Draft Environmental Impact Report. Pages 3.12-11 <http://generalplan.co.tulare.ca.us>

3.6 Geology, Soils and Mineral Resources

INTRODUCTION

This section presents a description of the geologic and soils conditions and the mineral resources in Tulare County and the potential impacts associated with implementation of the proposed Program.

IMPACTS EVALUATION CRITERIA

The CEQA Criteria for evaluation of adverse effects on geology, soils¹ and mineral resources are:

- a) *Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - i) *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?*
 - ii) *Strong seismic ground shaking?*
 - iii) *Seismic-related ground failure, including liquefaction?*
 - iv) *Landslides?**
- b) *Would the project result in substantial soil erosion or the loss of topsoil?*
- c) *Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*
- d) *Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1997), creating substantial risks to life or property?*
- e) *Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*
- f) *Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

REGULATORY SETTING

The following environmental and regulatory settings were summarized, in part, from information contained in the Tulare County General Plan 2010 Background Report.²

Federal Regulations

There are no federal regulations pertaining to geological, soil, seismic, or mineral resources.

State Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The delineation of zones along active faults in California is required by the Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act et. seq.), signed into law December 1972. The purpose of the act was to prohibit the location of most structures for human occupancy across active fault traces and to thereby mitigate the hazard of surface fault rupture. Surface fault rupture is not necessarily restricted to the area within an Alquist-Priolo Zone. The policies and criteria are limited to potential hazards resulting from surface faulting or fault creep within Earthquake Fault Zones delineated on maps officially issued by the State Geologist.

Seismic Hazards Mapping Act

In 1990, the California State Legislature passed the Seismic Hazard Mapping Act to protect public safety from the effects of strong shaking, liquefaction, landslides, or other ground failure and other hazards caused by earthquakes. The act is codified in the Public Resources Code as Division 2, Chapter 7.8, Section 2690-2699.6 and became operative on April 1, 1991. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo Earthquake Fault Zoning Act (described above). This act requires the State Geologist to delineate seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site has to be conducted and appropriate mitigation measures incorporated into the project design. The act also requires sellers of real property within the zones to disclose this fact to potential buyers.

California Building Code

The purpose of the California Building Code (*CBC*) is to provide minimum standards to preserve the public peace, health, and safety by regulating the design, construction, quality of materials, certain equipment, location, grading, use, occupancy, and maintenance of all buildings and structures.

Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must

be centralized in Title 24 or they are not enforceable. About one-third of the text within the *CBC* has been tailored for California earthquake conditions.

Construction Stormwater NPDES General Permit

The *CVRWQCB* administers the *NPDES* stormwater permitting program in the Central Valley Region for construction activities. Construction activities disturbing one or more acres of land are subject to the permitting requirements of the *NPDES* General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (Construction General Permit). The Construction General Permit is established under *SWRCB* Order 2009-0009-*DWQ* (as amended by Orders 2010-0014-*DWQ* and 2012-006-*DWQ*) Construction and demolition activities subject to this permit include clearing, grading, grubbing, and excavation, or any other activity that results in a land disturbance equal to or greater than one acre

For qualifying projects, the project applicant must submit a Notice of Intent to the *CVRWQCB* to be covered by the Construction General Permit prior to beginning construction. The Construction General Permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (*SWPPP*), which must also be completed before construction begins. The *SWPPP* must identify best management practices (*BMPs*) that are to be implemented to reduce construction impacts on receiving water quality based on potential pollutants. The *SWPPP* also must include descriptions of the *BMPs* to reduce pollutants in stormwater discharges after all construction phases are completed at a site (post-construction *BMPs*).

Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act of 1975 (*SMARA*) requires all cities and counties to incorporate in their general plans the mapped designations approved by Department of Mining and Geology (*DMG*). These designations include lands categorized as Mineral Resource Zones (*MRZs*). *MRZ* classifications are set forth in guidelines developed by the State Mining and Geology Board and are used to communicate information concerning the existence of mineral resources. Priority is given to areas where future mineral resources are likely to be mined during the 50-year period following their classification.

Section 2762(d) of *SMARA* establishes specific lead agency noticing requirements prior to permitting a use that would preclude future extraction of identified mineral resources, defined as either (1) the potential to extract minerals in *MRZ-2* lands, or (2) land designated in a lead agency's general plan as having important minerals to be protected. *MRZ-2* areas are underlain by mineral deposits where geologic data indicate that significant mineral deposits are located or likely to be located.

Local Regulations

The Tulare County General Plan Health and Safety Element includes polices on seismic safety. The Environmental Resources Management Element includes policies to promote efficient use of mineral extraction resources and promote compatible development near mineral extraction resource areas.

ENVIRONMENTAL SETTING³

Tulare County is divided into two major physiographic and geologic provinces: the Sierra Nevada Mountains and the Central Valley. The Sierra Nevada Physiographic Province, in the eastern portion of the Tulare County, is underlain by metamorphic and igneous rock. It consists mainly of homogeneous granitic rocks, with several islands of older metamorphic rock. The central and western parts of the County are part of the Central Valley Province, underlain by marine and non-marine sedimentary rocks. It is basically a flat, alluvial, plain, with soil consisting of material deposited by the uplifting of the mountains and montane runoff.

The foothill area of the County is essentially a transition zone, containing old alluvial soils that have been dissected by the west-flowing rivers and streams that carry runoff from the Sierra Nevada Mountains. This gently rolling topography is punctured in many areas by outcropping soft bedrock, with soils generally quite dense and compact.

Seismicity

Seismicity varies greatly between the two major geologic provinces in Tulare County. The Central Valley is an area of relatively low tectonic activity bordered by mountain ranges on either side. The Sierra Nevada Mountains, partially located within Tulare County, are the result of tectonic plate movement which resulted in the creation of the mountain range. The Coast Range on the west side of the Central Valley is also a result of these forces, and the continued uplifting of Pacific and North American tectonic plates continues to elevate these ranges. The seismic hazards in Tulare County generally result from movement along faults associated with the creation of these ranges.

Earthquakes are typically measured in terms of magnitude and intensity. The most commonly known measurement is the Richter Scale, a logarithmic scale which measures the magnitude (strength) of a quake. The Modified Mercalli Intensity Scale measures the intensity of an earthquake as a function of the following factors:

- Magnitude and location of the epicenter;
- Geologic characteristics;
- Groundwater characteristics;
- Duration and characteristic of the ground motion; and
- Structural characteristics of buildings.⁴

Faults

Faults are the indications of past seismic activity. It is assumed that those that have been active most recently are the most likely to be active in the future. Recent seismic activity is measured on a geologic timescale. Geologically recent is defined as having occurred within the last two million years (the Quaternary Period). All faults believed to have been active during Quaternary time are considered “potentially active.”

In 1973, five counties within the Southern San Joaquin Valley undertook the preparation of the Five County Seismic Safety Element to assess seismic hazards. It identified three faults within the region that have been, and will be, principal sources of potential seismic activity within Tulare County. These faults are described below:

- **San Andreas Fault.** Located approximately 40 miles west of the Tulare County boundary, the San Andreas Fault has a long history of activity, and is thus a primary focus in determining seismic activity within the County. Seismic activity along the fault varies along its span from the Gulf of California to Cape Mendocino. Just west of Tulare County lies the “Central California Active Area,” section of the San Andreas Fault where many earthquakes have originated.
- **Owens Valley Fault Group.** A complex system containing both active and potentially active faults, located on the eastern base of the Sierra Nevada Mountains. The Owens Valley Fault Group is located within Tulare and Inyo Counties and has historically been a major source of seismic activity within Tulare County. The center of the fault zone is thought to be able to produce a maximum probable earthquake of 7.0 on the Richter Scale at a recurrence interval of 125 years, and capable of producing an earthquake of 8.25 magnitude every 300 to 10,000 years.
- **Clovis Fault.** Considered to be active within the Quaternary Period, although there is no historic evidence of its activity, and is therefore classified as “potentially active.” The Clovis Fault lies approximately six miles south of the Madera County boundary in Fresno County. Activity along this fault could potentially generate more seismic activity in Tulare County than the San Andreas or Owens Valley fault systems. In particular, a strong earthquake on the Fault could affect northern Tulare County. However, because of the lack of historic activity along the Clovis Fault, inadequate evidence exists for assessing maximum earthquake impacts.

Groundshaking

Groundshaking is considered the primary geologic hazard in Tulare County because of the County’s geologic setting and its record of historical activity. Thus, emphasis focuses on the analysis of expected levels of groundshaking, which is directly related to the magnitude of a specific quake and the distance from a quake’s epicenter. Magnitude is a measure of the amount of energy released in an earthquake, with higher magnitudes causing increased groundshaking over longer periods of time, thereby affecting a larger area. Groundshaking intensity, which is often a more useful measure of earthquake effects than magnitude, is a qualitative measure of the effects felt by the population.

The Five County Seismic Safety Element includes an assessment that with the maximum probable earthquake of a magnitude 8 to 8.5 centered along the San Andreas Fault “relatively low levels of shaking should be expected in the eastern and central parts of the valley.” The San Joaquin Valley portion of Tulare County is located on alluvial deposits, which tend to experience greater groundshaking intensities than areas located on hard rock. Therefore, structures located in

this area will tend to suffer greater damage from groundshaking than those located in the foothill and mountain areas.

The susceptibility of a structure to damage from earthquake groundshaking is related to the foundation material underlying the structure. A foundation of rock or very firm material intensifies short period motions, which affect low, rigid buildings more than those that are tall and flexible. A deep layer of water-logged soft alluvium may cushion low, rigid buildings, but accentuate the motion in tall buildings. The amplified motion resulting from softer alluvium soils can also severely damage older masonry buildings.

Liquefaction

Liquefaction is a process whereby soil is temporarily transformed to a fluid form during intense and prolonged groundshaking. Soils most prone to liquefaction are those that are water saturated (e.g., where the water table is less than 30 feet below the surface) and consist of relatively uniform sands that are of low to medium density. In addition to susceptible soil conditions, the ground acceleration and duration of the earthquake must be of sufficient energy to induce liquefaction. Scientific studies have shown that the ground acceleration must approach 0.3 gravity before liquefaction occurs in a sandy soil with relative densities typical of the San Joaquin alluvial deposits. Liquefaction during major earthquakes has caused severe damage to structures on level ground as a result of settling, tilting, or floating. Such damage occurred in San Francisco on bay-filled areas during the 1989 Loma Prieta earthquake, even though the epicenter was several miles away. No county-wide assessments to identify liquefaction hazards have been performed in Tulare County. Areas where groundwater is less than 30 feet below the surface occur primarily in the San Joaquin Valley portion of the County. However, soil types in the Valley are not conducive to liquefaction because they are either too coarse or too high in clay content.

Settlement

Settlement can occur in poorly consolidated soils during groundshaking. During settlement, the soil materials are physically rearranged by the shaking and result in reduced stabling alignment of the individual minerals. Settlement of sufficient magnitude to cause significant structural damage is normally associated with rapidly deposited alluvial soils, or improperly founded or poorly compacted fill. Such soils are known to undergo extensive settling with the addition of irrigation water, but evidence of settlement of Valley soils due to groundshaking is not available. Insufficient data is available to conclude that settlement would occur during a large earthquake; however, sufficient data is available to indicate that the potential for seismic-induced settlement exists in Tulare County.

Other Geologic Hazards

Landslides

Landslides are a geologic hazard influenced by four factors:

- Strength of rock and resistance to failure, which is a function of rock type (or geologic formation);
- Geologic structure or orientation of a surface along which slippage could occur;
- Water (can add weight to a potentially unstable mass or influence strength of a potential failure surface); and
- Topography (amount of slope in combination with gravitation forces).

Tulare County has three geologic environments: the valley, foothills, and mountains, with a range of landslide hazards. As of June 2009, the California Geological Survey had not developed landslide hazard identification maps for Tulare County.⁵ However, it is reasonable to assume that the potential exists for certain areas in Tulare County to experience more landslides than other areas. These areas do not include the Valley portion of the County. Erosion and slumping of soils can, however, also occur along levees adjacent to the Kaweah, Kings, and Tule Rivers.

Subsidence

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soils that are particularly subject to subsidence include those with high silt or clay content. Subsidence caused by groundwater withdrawal generally presents a more serious problem, since it can affect large areas. Oil and gas withdrawal, on the other hand, tends to affect smaller, localized areas. Some areas of the Central Valley have subsided more than 20 feet during the past 50 years.⁶

Seiche

A seiche is a standing wave produced in a body of water such as a reservoir, lake, or harbor, by wind, atmospheric changes, or earthquakes. Seiches are not considered a risk in Tulare County.³ The effects from a seiche would be similar to the flood hazard for a particular area, and the risk of occurrence is immeasurably less than the risk of flooding.

Volcanic Hazards

The nearest volcanoes lie to the northeast of Tulare County in Mono County, in the Mammoth Lakes/Long Valley area. According to the California Geological Survey, the most serious potential effect on Tulare County of an eruption in the Mammoth Lakes area would be ash deposition. Such an occurrence is highly unlikely as ash deposition in the County would be dependent upon an unlikely northeast wind configuration and geologists do not consider volcanoes in the Mammoth Lakes to be active.

Mineral Resources⁷

Economically, the most important minerals that are extracted in Tulare County are sand, gravel, and crushed rock. Other minerals that could be mined commercially, but not in the Valley portion of the County, include tungsten, which has been mined to some extent, and relatively small amounts of chromite, copper, gold, lead, manganese, silver, zinc, barite, feldspar,

limestone, and silica. Minerals that are present but do not exist in the quantities desired for commercial mining include antimony, asbestos, graphite, iron, molybdenum, nickel, radioactive minerals, phosphate, construction rock, and sulfur.

Aggregates are the most valuable mineral resource in Tulare County because they are a major component of Portland cement concrete (*PCC*) and asphaltic concrete (*AC*). *PCC* and *AC* are essential to constructing roads, buildings, and other infrastructure needs. There are four streams that have provided the main source of high quality sand and gravel in Tulare County: Kaweah River, Lewis Creek, Deer Creek and the Tule River. The highest quality deposits are located at the Kaweah and Tule Rivers. Lewis Creek deposits are considerably inferior to those of the other three streams.⁸

Oil and Gas Resources

Oil and gas resources have historically been an important commodity in California. However, the demand for these resources tends to fluctuate with changing market conditions.

Tulare County, in 2013, had a total of 80 active oil wells producing an annual total of 49,021 barrels of oil.⁹ There are no active gas wells. There are two areas where oil resources exist and one area where gas resources exist in Tulare County. They are described as follows:

- **Deer Creek.** The Deer Creek oil fields, located approximately 6 miles south of Porterville and east of State Route 65, were discovered in 1953. Oil production in 2013 totaled 48,556 barrels of oil.
- **North Deer Creek.** The North Deer Creek oil fields, situated approximately 3 miles south of Porterville and east of State Route 65, were discovered in 1961. Only 465 barrels of oil were produced at this field in 2013.
- **Trico.** The Trico gas fields were discovered in 1934. As of 2006, there were no active wells.

IMPACTS

Impact #3.6.1 - Seismic Effects: [Evaluation Criteria (a) i, ii, iii]

Although the County is situated in proximity to several fault groups including the San Andreas Fault located approximately 40 miles west of the County boundary, and the Owens Valley Fault Group located on the eastern base of the Sierra Nevada Mountains, the County is not identified as being in a delineated Alquist-Priolo Earthquake Fault Zone. Construction of all dairies and confined-bovine facilities would be required to obtain a building permit from the County of Tulare and to comply with the California Building Code. With typical dairy facility single-story construction, and adherence to the building codes and regulations, impacts associated with potential rupture of earthquake faults, strong groundshaking, and seismic-related ground failure would be minimized.

Conclusion: Because the proposed Program would not expose people or structures to substantial adverse effects due to seismic risks, impacts are *less than significant*.

Mitigation Measures: None are required.

**Impact #3.6.2 - Landslides, Geologic Unit/Soil Instability:
[Evaluation Criteria (a) (iv), (c)]**

Only the foothill and mountain areas of the County are likely to experience landslides. New or expanded dairies and other bovine facilities would be limited to the Valley floor. Regarding geologic unit or soil instability, new or expanded dairies and other bovine facilities would be required to obtain a building permit from the County of Tulare and to comply with the California Building Code, and applicable development requirements. Construction of new dairy facilities requires approval of a Special Use Permit which may require a site-specific Geological-Hydrological Report prepared by a professional engineer. Adherence to existing regulations and recommendations provided in these reports minimizes impacts associated with geologic unit or soil instabilities.

Conclusion: Because the proposed Program would not expose people or structures to substantial adverse effects due to landslides, or unstable soils or geologic units, the proposed Program would result in *less than significant impacts*.

Mitigation Measures: None are required.

**Impact #3.6.3 - Soil Erosion, Topsoil Loss:
[Evaluation Criteria (b)]**

Development of dairies and other bovine facilities can accelerate erosion rates through both an increase in short-term construction-related activities and an overall increase in the amount of impervious surfaces. Construction activities associated with expanded or new dairies and other bovine facilities, including Dairy CAP GHG reduction measures with construction impacts, have the potential to cause erosion or siltation. However, the construction NPDES general permit would require a stormwater pollution prevention plan (SWPPP) to be implemented for any ground disturbance greater than 1 acre. The SWPPP would identify the sources of pollutants that may affect the quality of storm water and would include construction site best management practices (BMPs) to control erosion and loss of topsoil.

Conclusion: Because the proposed Program would not result in substantial soil erosion or loss of topsoil, the proposed Program impacts are *less than significant*.

Mitigation Measures: None are required.

**Impact #3.6.4 - Expansive Soil Hazards:
[Evaluation Criteria (d)]**

Expansive soils possess clay particles that react to moisture changes by shrinking (when they dry) or swelling (when they become wet). Expansive soils can also consist of silty to sandy clay particles. The extent of shrinking and swelling is influenced by the environment, including the extent of wet or dry cycles, and by the amount of clay in the soil. This physical change in the soils can react unfavorably with building foundations, concrete walkways, roadways, and masonry walls. Within the County, expansive soils are more common along the western edge of the foothills. In most of the Valley floor areas, the existing layer of clay has been blended into more granular soils as a part of agricultural land-leveling and cropping activities and of site excavation and leveling, helping to reduce the overall soil expansiveness.

New or expanded dairies and other bovine facilities would be required to obtain a building permit from the County of Tulare and to comply with the California Building Code, and applicable development requirements. Construction of new dairy facilities requires approval of a Special Use Permit which includes a site-specific Geological-Hydrological Report prepared by a professional engineer. Adherence to existing regulations and recommendations provided in these reports minimizes impacts associated with expansive soils.

Conclusion: Because the proposed Program would not create substantial risks to life or property due to expansive soils, impacts are *less than significant*.

Mitigation Measures: None are required.

**Impact #3.6.5 - Mineral Resources:
[Evaluation Criteria (e), (f)]**

Construction of expanded or new dairies and other bovine facilities would not occur in or near areas with known mineral resources or locally important mineral resource recovery sites.

Conclusion: Due to its location, the proposed Program would have *a less than significant* impact on this resource.

Mitigation Measures: None are required.

REFERENCES

¹ CEQA Guidelines Appendix G also asks whether the project would be located on soils incapable of supporting septic tanks or alternative wastewater disposal systems. County regulations would assure that any such new wastewater disposal systems would occur on soils capable of supporting their use.

² County of Tulare. 2010. General Plan Background Report. <http://generalplan.co.tulare.ca.us>

³ County of Tulare, 2010 General Plan Background Report, Page 8-4, Tulare County, CA. <http://generalplan.co.tulare.ca.us>

⁴ County of Tulare. 2010. General Plan Background Report. Page 8-5. Tulare County, CA. <http://generalplan.co.tulare.ca.us>

⁵ Ibid, Pages 8-10. <http://generalplan.co.tulare.ca.us>

⁶ Ibid, Pages 8-11. <http://generalplan.co.tulare.ca.us>

⁷ Ibid, Pages 10-17. <http://generalplan.co.tulare.ca.us>

⁸ Ibid, Page 10-17 to 10-18. <http://generalplan.co.tulare.ca.us>

⁹ California Department of Conservation, Division of Oil, Gas, & Geothermal Resources. 2013. 2012 Annual Report , California Oil and Gas Production Statistics.

ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2012/PR03_PreAnnual_2012.pdf

3.7 Greenhouse Gas/Energy Impact Analysis

INTRODUCTION

This section provides a summary of the current regulatory framework related to energy and global climate change in California, and includes County setting information. The County has prepared the draft County of Tulare Dairy and Feedlot Climate Action Plan (Draft Dairy CAP), attached as Appendix B, as a component of the proposed Program in order to address impacts related to energy and global climate changes and to institute a program to incorporate greenhouse gas (GHG) emissions reduction measures and energy reduction measures in proposed new dairy and feedlot facilities and expansions of existing facilities. This section analyzes the proposed Program's impacts on energy and global climate change.

IMPACT EVALUATION CRITERIA

Evaluation criteria for GHG impacts are:

Would the project:

- a) *Directly or indirectly result in an increase in GHG emissions compared to existing conditions?*
- b) *Be inconsistent with Tulare County's Climate Action Plan or TCAG's Regional Transportation Plan/Sustainable Communities Strategies?*
- c) *Be inconsistent with the state's ability to achieve GHG emissions reduction targets under AB 32 and Executive Orders B-30-15 and S-3-05?*
- d) *Use energy in an inefficient, wasteful, or unnecessary manner?*
- e) *Result in an increased reliance on fossil fuels and decreased reliance on renewable energy sources.*

REGULATORY SETTING

The following environmental and regulatory settings were, in part, summarized from information contained in the Draft Dairy CAP (Appendix B).

Federal Regulations

EPA Mandatory Reporting of Greenhouse Gases

The United States Environmental Protection Agency's (EPA)'s Mandatory Reporting of Greenhouse Gas Rule (EPA Mandatory Reporting Rule) became law on January 1, 2010 (40 CFR Part 98). Designed to cover 85 to 90 percent of the nation's GHG emissions, this law requires certain large emitters and suppliers to report their GHG data on an annual basis.

Generally, facilities that emit 25,000 metric tons (*MT*) or more of carbon dioxide equivalent (*CO_{2e}*) per year are required to report. The purpose of the law is not to control *GHG* emissions, but to collect accurate and pertinent data to inform future *GHG* policies and programs.

The *EPA* Mandatory Reporting Rule currently features a subpart for livestock facilities with manure management systems that emit 25,000 *MT* of *CO_{2e}* per year or more (Subpart JJ - Manure Management), which is not being implemented currently. In addition to an emissions threshold, the subpart identifies the animal population threshold below which facilities are not required to report emissions. For dairies, this number is calculated to be 3,200 mature dairy cows, while for cattle feedlots, this number is calculated to be 29,300 cattle. Because the *EPA* has not yet implemented Subpart JJ, dairy facilities and cattle feedlots are currently not subject to federal *GHG* reporting requirements.

State Regulations

Assembly Bill 32: California Global Warming Solutions Act Of 2006

In response to Executive Order S-3-05, described below, the Legislature drafted the California Global Warming Solutions Act of 2006, commonly known as *AB 32*, which was signed into law on September 27, 2006. The law requires the California Air Resources Board (*CARB*) to adopt rules and regulations to reduce statewide *GHG* emissions to 1990 levels by 2020. The law emphasizes that in adopting these regulations *CARB* shall, to the extent feasible, minimize “leakage,” which is defined as “a reduction in emissions of greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside of the state.” For example, regulations that result in dairy relocations outside of California would not reduce global *GHGs*. The law also requires *CARB* to prepare a scoping plan to identify and make recommendations on the emission reduction measures, compliance mechanisms, and incentives that are necessary or desirable to achieve the maximum technologically feasible and cost-effective reductions in *GHG* emissions by 2020.

The initial *AB 32* Climate Change Scoping Plan (Scoping Plan) was approved by the *CARB* in 2008. The Scoping Plan was supplemented on August 24, 2011, and the First Update to the Scoping Plan was issued in May 2014. The Scoping Plan highlights the various measures that will be used to achieve the goals of *AB 32*. One of the plan’s proposed strategies is to establish a cap-and-trade program for the economic sectors responsible for the majority of California’s *GHG* emissions. The Scoping Plan recognizes that some sectors (e.g. agriculture) are currently not suitable for inclusion in the cap-and-trade program and, as a result, instead recommends separate complementary voluntary strategies for those sectors.

For the dairy industry, no reductions from animal-related emissions are required in the Scoping Plan and no targets for animal-related emissions reductions are imposed. Instead, the Scoping Plan includes the installation of manure digester systems to capture methane emissions as a voluntary strategy for the agricultural sector, recognizing that economic incentives will be needed in order to make the strategy effective. The 2011 supplement to the Scoping Plan (Scoping Plan Supplement) specifically highlights that most dairies in California are located in the San Joaquin Valley and are consequently subject to strict smog strategies for new equipment. These strict strategies apply to new equipment such as manure digester systems. Because of the

low quality of the biogas produced in the manure digester systems, it is either technologically infeasible or cost prohibitive to meet *SJVAPCD*'s emissions standards (e.g., nitrous oxide) without financial incentives. The May 2014 First Update (First Update) acknowledges that the voluntary installation of manure digesters has not advanced as anticipated and identifies the challenges to the voluntary installation of manure digester systems, including the economic recession, increased feed and fuel prices, lack of sufficient financial incentives and insufficient utility contracts. However, the First Update indicates that, in response, *CARB* is continuing to work with other agencies to remove economic obstacles to digester installations, to evaluate the co-benefits, and to examine the potential for voluntary efforts to be more widely adopted. In addition, *CARB* plans to work with stakeholders to determine whether and how the program should become mandatory and/or more strongly incentivized. In response, the County will monitor these advances and make adjustments to the Draft Dairy *CAP*, where feasible. The Scoping Plan includes a voluntary offset program, described below, as one potential monetary incentive. In addition, the First Update incorporates a list of key recommended actions for the agriculture sector, which includes the following:

“In 2014, convene an interagency workgroup that includes *CDFA*, *CARB*, *CEC*, *CPUC*, and other appropriate State and local agencies and agriculture stakeholders to:

- Establish agriculture sector *GHG* emission reduction planning targets for the mid-term time frame and 2050.
- Expand existing calculators and tools to develop a California-specific agricultural *GHG* tool for agriculture facility operators to use to estimate *GHG* emissions and sequestration potential from all on-farm sources. The tool would include a suite of agricultural *GHG* emission reduction and carbon sequestration practices and would allow users to run different scenarios to determine the best approach for achieving on-farm reductions.
- Make recommendations on strategies to reduce *GHG* emissions associated with the energy needed to deliver water used in agriculture based on the evaluation of existing reporting requirements and data.

The Dairy Digester Workgroup will develop recommendations for a methane capture standard for 2016.

Conduct research that identifies and quantifies the *GHG* emission reduction benefits of highly efficient farming practices, and provide incentives for farmers and ranchers to employ those practices.”¹

Title 24 of the California Code of Regulations

The State of California regulates energy consumption under Title 24 of the California Code of Regulations. The Title 24 Building Energy Efficiency Standards were developed by the California Energy Commission (*CEC*) and apply to energy consumed for heating, cooling, ventilation, water heating, and lighting in new residential and non-residential buildings. The *CEC* updates these standards periodically. California's Building Energy Efficiency Standards are

updated on an approximate 3-year cycle. The most recent update was in 2013. The 2013 Title 24 standards went into effect July 1, 2014.

The 2013 California Green Building Standards Code (24 CCR Part 11) took effect January 1, 2014. These comprehensive regulations will achieve major reductions in *GHG* emissions, energy consumption, and water use. They require that every new building constructed in California reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills, and install low-pollutant-emitting materials. They also require separate water meters for nonresidential buildings' indoor and outdoor water use, with a requirement for moisture-sensing irrigation systems for larger landscape projects and mandatory inspections of energy systems (e.g., heat furnace, air conditioner, and mechanical equipment) for nonresidential buildings larger than 10,000 square feet to ensure that all are working at their optimal capacity and according to their design efficiencies.

Assembly Bill 1493(Pavley)/Advanced Clean Cars Program/Zero Emission Vehicle Program

California Assembly Bill (*AB*) 1493, enacted on July 22, 2002, required *CARB* to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks.

In January 2012, *CARB* approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards called Advanced Clean Cars (13 CCR 1962.1 and 1962.2). The Advanced Clean Cars requirements include new *GHG* standards for model year 2017 to 2025 vehicles.

The Advanced Clean Cars Program also includes the Low Emission Vehicle (*LEV*) III amendments to the *LEV* regulations (13 CCR 1900 et seq.), the Zero Emission Vehicle Program, and the Clean Fuels Outlet Regulation. The Zero Emission Vehicle Program is designed to achieve California's long-term emission reduction goals by requiring manufacturers to offer for sale specific numbers of the very cleanest cars available. These zero-emission vehicles, which include battery electric, fuel cell, and plug-in hybrid electric vehicles, are just beginning to enter the marketplace. They are expected to be fully commercial by 2020. The Clean Fuels Outlet regulation ensures that fuels such as electricity and hydrogen are available to meet the fueling needs of the new advanced technology vehicles as they come to market.

Executive Order S-3-05

Executive Order S-3-05 was signed by Governor Schwarzenegger on June 1, 2005. This executive order established *GHG* emission reduction targets for California. Specifically, the executive order established the following targets:

- *By 2010, reduce greenhouse gas emissions to 2000 levels;*
- *By 2020, reduce greenhouse gas emissions to 1990 levels; and*
- *By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.*

The 2050 reduction goal represents what scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be an aggressive, but achievable, mid-term target. The executive order required the Secretary of the Cal *EPA* to coordinate oversight of the efforts among State agencies made to meet the targets and report to the Governor and the State Legislature biannually on progress made toward meeting the *GHG* emission targets. In response to the executive order, the Secretary of Cal *EPA* created the Climate Action Team (*CAT*), composed of representatives from *CARB*; Business, Transportation, & Housing; Department of Food and Agriculture; *CEC*; CalRecycle; the Resources Agency; and the California Public Utilities Commission.

California's GHG Cap-and Trade Program

To comply with the recommendations outlined in the *AB 32* Scoping Plan, *CARB* established the California Greenhouse Gas Cap-and-Trade Program (Cap-and-Trade Program) (17 *CCR* §§95800-96023), which took effect on January 1, 2012. Per *CARB*'s web site: "Cap-and-trade is a market based regulation that is designed to reduce greenhouse gases (*GHGs*) from multiple sources. Cap-and-trade sets a firm limit or 'cap' on *GHGs* and minimize the compliance costs of achieving *AB 32* goals ... Trading creates incentives to reduce *GHGs* below allowable levels through investments in clean technologies ... Market forces spur technological innovation and investments in clean energy. Cap-and-trade is an environmentally effective and economically efficient response to climate change."² The first phase of the Cap-and-Trade Program only applies to in-state electrical generating facilities and large industrial facilities that emit over 25,000 *MT* of *CO₂e* per year. Compliance obligations for this first phase began on January 1, 2013, after which covered entities are required to remain at or below their respective established emissions caps. The second phase of the program began on January 1, 2015, and will extend to fuel distributors.

Dairies and Cap-and-Trade

The Cap-and-Trade Program allows covered entities to meet their established emissions cap through the purchase of emission offset credits. Per the Cap-and-Trade Program regulation, an offset credit must represent a *GHG* emission reduction that is "real, additional, quantifiable, permanent, verifiable, and enforceable" and must result from the use of an established offset protocol (§95970). Per §95972 of the regulation, in order to be approved by *CARB*, a compliance offset protocol must conservatively account for activity-shifting leakage and market-shifting leakage for the offset project type. "Activity-Shifting Leakage" is defined in §95802 of the regulation as "increased *GHG* emissions or decreased *GHG* removals that result from the displacement of activities or resources from inside the offset project's boundary to locations outside the offset project's boundary as a result of the offset project activity." "Market-Shifting Leakage" is defined as "increased *GHG* emissions or decreased *GHG* removals outside an offset project's boundary due to the effects of an offset project on an established market for goods or services."

Dairies have a unique position in the Scoping Plan. The Scoping Plan does not require *GHG* emissions reductions from any animal-related sources on a dairy and does not impose any emissions reduction targets. Instead, voluntary incentive-based approaches are encouraged.

Specifically, under the Cap-and-Trade Program, the Compliance Offset Protocol Livestock Projects is one of the four protocols for voluntary activities that have been approved by *CARB* to date. This protocol provides the procedures necessary for quantifying and reporting *GHG* emission reductions associated with the installation of a biogas control system (e.g. a digester) for manure management on dairy cattle and swine farms. The protocol is designed to ensure accurate, transparent and conservative quantification of *GHG* emissions reductions associated with a digester project for generating offsets. Emission reductions quantified through the procedures outlined in the protocol can be sold in the market as emission offset credits. This arrangement can provide a financing tool that may assist in making the voluntary installation of a manure digester system feasible. In this context, feasibility depends upon achieving compliance with required emissions strategies, economic viability, utility infrastructure support, and site suitability. Consequently, a proposed digester installation that is feasible for one facility may not be deemed feasible at another facility.

California's Mandatory Reporting Rule

The State of California has its own mandatory reporting regulation, the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (California Mandatory Reporting Rule) (17 *CCR* §§95100-95157). The California Mandatory Reporting Rule, approved in 2007, is similar to the *EPA* Mandatory Reporting Rule in that it requires certain large emitters and suppliers to report their *GHG* data on an annual basis; however, the California emissions threshold is lower at only 10,000 *MT* of *CO₂e* per year. Like the *EPA* Mandatory Reporting Rule, the California Mandatory Reporting Rule currently excludes *GHG* emissions related to livestock manure management systems.

Senate Bill 97

CEQA requires California lead agencies to assess the potential environmental impacts of proposed projects within their jurisdiction. However, when *CEQA* was first established, lead agencies were not required to assess the environmental impacts of a project's *GHG* emissions. In 2007, this changed with the passage of Senate Bill 97 (*SB 97*), which required *OPR* to develop amendments to the *CEQA* Guidelines that would specifically address the analysis and mitigation of *GHG* emissions. The resulting amendments to the *CEQA* Guidelines were adopted and became effective in March 2010. Lead agencies are now required to incorporate the analysis of *GHG* emissions in their *CEQA* reviews. Specifically, the amendments require the following, as described in the *CEQA* Guidelines (§15064.4):

- Quantify the *GHG* emissions from the project;
- Determine if the emissions exceed a significance threshold the lead agency determines to apply to the project; and
- Determine the extent to which the project complies with applicable regulations, requirements, or plans.

Executive Order B-30-15

Executive Order B-30-15, among other things, establishes a new interim statewide *GHG* emission reduction target to reduce *GHG* emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing *GHG* emissions to 80 percent below 1990 levels by 2050. It further orders that all state agencies with jurisdiction over sources of *GHG* emissions to implement measures, pursuant to statutory authority, to achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 *GHG* emissions reductions targets. It also directs *CARB* to update the Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent (*MMTCO_{2e}*). Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy every three years, and to ensure that its provisions are fully implemented. While the executive order does not apply to cities and counties, it will result in an update of the Scoping Plan that has the potential to lead to regulatory changes that may affect the dairy sector.

California Senate Bill 700

California Senate Bill 700 (*SB 700*) was signed into law on September 22, 2003 and effectively replaced the existing blanket exemption from air permits for agriculture with narrower, more limited exemptions in state law. As a result, *CARB* and local air agencies such as the San Joaquin Valley Air Pollution Control District (*SJVAPCD*) are now required to regulate air pollution from agricultural sources. Since the adoption of *SB 700*, *SJVAPCD* has established a permitting program for large dairies and cattle feedlots and has also implemented several rules that apply to the agricultural industry such as Rule 4550, Conservation Management Practices, which aims to limit fugitive dust emissions from agricultural operation sites, and Rule 4570, Confined Animal Facilities, which aims to limit emissions of volatile organic compounds (*VOCs*) from confined animal facilities. Neither of these rules currently addresses *GHG* emissions.

SB 605

California Senate Bill 605 (*SB 605*) was signed into law on September 21, 2014 and requires *CARB* to develop a comprehensive strategy to reduce statewide emissions of short-lived climate pollutants. Short-lived climate pollutants, such as methane, have relatively high potency compared to carbon dioxide, even though they remain in the atmosphere a short amount of time. Specifically, *SB 605* requires *CARB* to inventory the sources and emissions of these pollutants, identify research gaps, identify existing and potential reduction measures, prioritize the development of new measures, and develop a comprehensive strategy for dealing with short-lived climate pollutant emissions by January 1, 2016. On September 30, 2015, *CARB* released its draft strategy describing the need and draft approach to reduce short-lived climate pollutants emissions to achieve the future *GHG* targets for the state. The draft strategy states that “reduc[ing] these emissions are the only practical way to immediately slow global warming.” Agricultural emissions of methane have been identified as one of the areas *CARB* is focusing on to reduce short-lived climate pollutants.³

Executive Order S-13-08

Executive Order S-13-08 indicates that “*climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California’s economy, to the health and welfare of its population and to its natural resources.*” Pursuant to the requirements in the executive order, in December 2009, the California Natural Resources Agency released its 2009 California Climate Adaptation Strategy. The Strategy is the “. . . *first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States.*” Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research. The Climate Adaptation Strategy was updated in 2014.⁴

SB 375

SB 375 (Chapter 728, Statutes of 2008) provides for a planning process to coordinate land use planning and transportation planning to help California meet the *GHG* reduction targets established in *AB 32*. *SB 375* requires Regional Transportation Plans prepared by Metropolitan Planning Organizations such as the Tulare County Association of Governments (*TCAG*) to incorporate a Sustainable Communities Strategy (*SCS*) in their Regional Transportation Plans that demonstrates how the region would achieve *GHG* emission reduction targets for passenger vehicles set by *CARB*.

Regional Plans and Regulations

San Joaquin Valley Air Pollution Control District GHG Significance Thresholds

The *SJVAPCD*’s guidance for addressing greenhouse gas in *CEQA* documents was adopted on December 17, 2009. The *SJVAPCD* proposes a threshold based on implementation of predetermined best performance standards that would reduce emissions by an amount consistent with *AB 32* targets. The guidance is intended to assist local agencies. Local agencies are encouraged, but are not required, to use the *SJVAPCD* thresholds.

According to the *SJVAPCD* guidance documents, projects requiring project specific environmental review would be evaluated according to a Best Performance Standards approach. Projects complying with the *GHG* emission reduction requirements established as Best Performance Standards would not require project-specific quantification of *GHG* emissions and would be determined to have a less than significant individual and cumulative impact for *GHG* emissions. Projects not complying with *GHG* emission reduction requirements established as Best Performance Standards would require quantification of project-specific *GHG* emissions. Projects requiring preparation of an Environmental Impact Report would require quantification of project specific *GHG* emissions. Projects implementing Best Performance Standards or achieving at least a 29 percent *GHG* emission reduction compared to “Business-as-Usual” would be determined to have a less than significant individual and cumulative impact for *GHG* emissions. The *SJVAPCD* began a public process of quantifying emission reductions for measures comprising Best Performance Standards in early 2010, but they have not completed the process. Until the quantification process is complete, use of this approach is not appropriate and would be premature in making significance determinations for climate change impacts. To date,

the *SJVAPCD* has not approved any *BPS* that are applicable to livestock operations, including dairies and cattle feed lots.

TCAG RTP/SCS

The *TCAG* Regional Transportation Plan and Sustainable Communities Strategy (*RTP/SCS*) is a multi-modal, long-range planning document. The most recent *RTP/SCS*⁵ was adopted in 2014, and covers the years 2014-2040. The *RTP/SCS* is updated every four years

The *RTP/SCS* includes programs and policies for congestion management, transit, bicycles and pedestrians, roadways and freight. It also includes an *SCS* that complies with *SB 375* requirements. The *SCS* achieves the following *CARB* per capita *GHG* reduction targets for passenger vehicles: 5% below 2005 levels by 2020 and 10% below 2005 levels by 2035.

Local Plans

Tulare County Climate Action Plan

The Tulare County Climate Action Plan⁶ is an implementation measure of the 2030 General Plan Update and was initially released in February 2010, and modified in August 2012. This Climate Action Plan (General Plan *CAP*) “serves as guiding documents for County of Tulare (County) actions to reduce greenhouse gas (*GHG*) emissions and adapt to the potential effects of climate change.” This plan is consistent with the *CEQA* Guidelines for *GHG* emissions reduction plans (*CEQA* Guidelines Section 15183.5) that allow for tiering and streamlining of project specific *GHG* analyses. The 2030 General Plan Update recognized that the County would be preparing a separate climate action plan for dairies and feedlots.

The 2030 General Plan Update did not include an update of the *ACFP* providing the County’s regulatory standards and procedures applicable to the development and operation of dairies and cattle feedlots. The 2030 General Plan Update provided for a separate subsequent process to update the *ACFP* with its own *CEQA* review and Environmental Impact Report. Under the 2030 General Plan Update, the County directed the preparation of a separate climate action plan as part of the *ACFP* update to specifically address dairies and feedlots. The Draft Dairy *CAP* serves that purpose.

ENVIRONMENTAL SETTING

Greenhouse Gases

Some gases in the atmosphere affect the Earth’s heat balance by absorbing infrared radiation. These gases can prevent the escape of heat in much the same way as glass in a greenhouse. This is often referred to as the “greenhouse effect,” and it is responsible for maintaining a habitable climate. On Earth the gases believed to be most responsible for global warming are water vapor, carbon dioxide (*CO*₂), methane (*CH*₄), nitrous oxide (*N*₂*O*), hydrofluorocarbons (*HFCs*), perfluorocarbons (*PFCs*), and sulfur hexafluoride (*SF*₆). Enhancement of the greenhouse effect can occur when concentrations of these gases exceed the natural concentrations in the atmosphere. Of these gases, *CO*₂ and methane are emitted in the greatest quantities from human activities. Emissions of *CO*₂ are largely by-products of fossil fuel combustion, whereas methane

primarily results from the anaerobic decomposition of organic matter associated with wetlands and swamps, agricultural practices and landfills. Sulfur hexafluoride is a *GHG* commonly used in the utility industry as an insulating gas in transformers and other electronic equipment. Sulfur hexafluoride, while comprising a small fraction of the total *GHGs* emitted annually world-wide, is a much more potent *GHG* with 23,900 times the global warming potential as CO_2 . There is widespread international scientific agreement that human-caused increases in *GHGs* has and will continue to contribute to global warming, although there is much uncertainty concerning the magnitude and rate of the warming. Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns.

Historical Context

As noted in the 2006 Climate Action Team Report to Governor Schwarzenegger and the Legislature (“*CAT Report*”),⁷ the Earth’s climate has always changed and evolved. This is most clearly exemplified in the 100,000-year ice-age cycles that have occurred. As described in the *CAT Report*, the last 10,000 years, and more specifically the last millennium, has been warm and one of the most stable climates observed. Yet the *CAT Report* states that during the 20th century a rapid change in the climate and climate change pollutants has occurred and these changes are attributable to human activities. Climate change is described by the *CAT Report* as a “shift in the ‘average weather’ that a given region experiences”, and that this can be measured by changes in temperature, wind patterns, precipitation, and storms. According to the *CAT Report*, human activities including the burning of coal, oil, and natural gas, and the reduction of forests have contributed to an increase in carbon dioxide (CO_2) in the atmosphere by approximately 30 percent since the late 1800s, and that the increase in CO_2 and other greenhouse gases, and change in land surface has had a major influence on some of the “key factors that govern climate change...”

The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects:⁸

- Rise in global surface temperatures;
- Heat waves will recur more often and will last longer;
- More frequent hot and fewer cold temperature extremes over most land areas;
- Extreme precipitation events will become more intense and more frequent in many regions; and
- Continued warming and acidification of the ocean.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved

are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

Baseline State GHG Emissions

CARB has released the 2015 Edition of the California Greenhouse Gas Emissions Inventory (*GHG* Inventory) which estimates *GHG* emissions statewide by sector for the years 2000 to 2013. The statewide total *GHG* emissions for 2013 were 459.3 million gross metric tons of CO_2 equivalent *GHG* emissions. By sector, the largest source was transportation at 37 percent, followed by industrial at 23 percent, electricity generation at 20 percent and agriculture at 8 percent.⁹ Statewide livestock-related emissions from dairies and feedlots accounted for 12.14 million gross metric tons of CO_2 equivalent of the *GHG* Inventory's estimated 2013 *GHG* emissions, and enteric fermentation accounted for 11.78 million gross metric tons.¹⁰

Potential Effects of Global Climate Change

Future global climate change conditions have the potential to affect a number of different resources. From a statewide perspective, global climate change could affect California's environmental resources through potential, though uncertain, changes related to future air temperatures and precipitation and their resulting impacts on water temperatures, reservoir operations, sea levels and stream runoff. The County *CAP* summarized the potential effects of global climate change on California, including reductions in water supply, increases in flood events and flood severity, detrimental changes in water management, reductions in surface water quality, increased wildland fire hazards, negative impacts to agricultural and forestry from wildfires, pests, increased temperatures, water reductions and flooding, negative impacts to public health due to heat waves and mosquito-borne diseases, negative impacts to plants and wildlife, and a rise in sea levels along California's coast.

IMPACTS

Similar to most sectors, new or expanding dairies and feedlots would emit *GHGs* during construction and operations from typical sources like vehicles (e.g., employee vehicle trips, delivery trucks), electricity usage, and water demand. These emissions are typically carbon dioxide emissions (CO_2) from combustion. However, dairies and feedlots also emit *GHGs* from the animals, manure management, crop production (i.e., fertilizer usage), and other associated activities. These emissions are predominantly methane and nitrous oxide.

Two of the largest sources of emissions at dairies and feedlots are methane emissions generated by the animal digestive process referred to as enteric fermentation and from manure. As with all types of animal agriculture, manure is generated on dairies and feedlots as a by-product of raising animals. Feedlot cattle produce far less manure than milking cows (approximately 40% less). The vast majority of the dairies are "flushed-lane" dairies that periodically remove manure from dairy freestall areas, collecting manure in lagoons and recycle the flush water. Manure has many different uses (e.g., fertilizer, soil amendment, compost feedstock, biogas feedstock, etc.) that can be used individually or in combination depending on the facility and types of potential end uses. It can be applied as a liquid or a solid to on-site fields to meet crop nutrient needs; it can be transported off-site to meet nutrient needs at a different facility; or it can be treated in an

anaerobic digester to generate methane, among other options. The beneficial end use of the manure is very site-specific and may vary from facility to facility.

**Impact #3.7.1 - Increase in GHG Emissions Compared to Existing Conditions:
[Evaluation Criteria (a)]**

In this analysis, *GHGs* emissions are presented as a carbon dioxide equivalent (CO_2e). The CO_2e is calculated by multiplying the emissions of each gas by its global warming potential (*GWP*), and adding the results together to produce a single, combined emission rate representing all *GHGs*. By convention, carbon dioxide (CO_2) is assigned a *GWP* of one. By comparison, methane (CH_4) has a *GWP* of 25, which means that it has 25 times the global warming effect as carbon dioxide on an equal basis. Nitrous oxide (N_2O) has a *GWP* of 298, which means that it has 298 times the global warming effect as carbon dioxide on an equal-mass basis. Hydrofluorocarbons (*HFCs*) are potent *GHGs*, with *GWPs* ranging from 140 to 11,700. The *GHG* emissions in this report are reported in units of metric tons which are equivalent to 1.1 U.S. tons, or 2,205 pounds.

The Draft Dairy *CAP* calculated emissions for existing dairies and other bovine facilities and also estimated the emissions associated with new and expanded facilities. Appendix Q presents details on the methodology and assumptions used to estimate *GHG* emissions.

Table 3.7-1, utilizing data from the Draft Dairy *CAP*, shows *GHG* emissions for 2013 (utilizing the slightly greater 2011 dairy and feedlot animal population numbers) and Table 3.7-2 shows the projected 2023 emissions.

**Table 3.7-1
Existing Dairy *GHG* Emissions - 2013
(Metric Tons/Year)**

	CO_2	CH_4	N_2O	<i>HFC-23</i>	CO_2e
Farm Equipment Exhaust	38,054	3	0	0.0	38,129
Farm Agricultural Soil	0	0	2,725	0.0	812,050
Farm Electricity Consumption	79,107	3	1	0.0	79,480
Dairy Equipment Exhaust	99,106	12	0	0.0	99,406
Truck Trips	23,137	0	0	0.0	23,137
Dairy Employee and Visitor Trips	14,882	3	3	0.0	15,851
Dairy Electricity Consumption	144,792	6	1	0.0	145,335
Dairy Refrigeration	0	0	0	4.3	63,640
Dairy Manure Decomposition	0	123,329	1,385	0.0	3,496,077
Dairy Enteric Digestion	0	98,523	0	0.0	2,463,071
Feedlot Manure Decomposition	0	388	67	0.0	29,598
Feedlot Enteric Digestion	0	9,083	0	0.0	227,068
Total	399,078	231,350	4,182	4.3	7,492,843

Notes:

1. Project level conditions represent existing (2013) conditions.
2. Metric Ton = 1,000 kg = 1.1 short tons.
3. CO_2e = carbon dioxide equivalent emissions, which is the sum of all emissions after multiplying by their global warming potentials. *GWPs* are 1 for CO_2 , 25 for CH_4 , 298 for N_2O , and 14,800 for *HFC-23* (Table A-1, 40 *CFR* Part 98).

4. Emission estimates for all source categories except for manure decomposition and enteric digestion have been pulled from analyses completed for the Tulare County *ACFP* Update *EIR*. See Appendix B to the Draft Dairy *CAP*.
5. Details regarding the manure decomposition and enteric digestion emission estimates can be found in Appendix A to the Draft Dairy *CAP*.

The following Table 3.7-2, utilizing data from the Draft Dairy *CAP*, represents total projected 2023 dairy GHG emissions.

**Table 3.7-2
Total Dairy GHG Emissions - 2023
(Metric Tons/Year)**

	<i>CO</i> ₂	<i>CH</i> ₄	<i>N</i> ₂ <i>O</i>	<i>HFC-23</i>	<i>CO</i> ₂ <i>e</i>
Farm Equipment Exhaust	52,145	2	0	0.0	52,195
Farm Agricultural Soil	0	0	3,731	0.0	1,111,838
Farm Electricity Consumption	108,340	5	1	0.0	108,763
Dairy Equipment Exhaust	135,303	7	0	0.0	135,478
Truck Trips	28,493	0	0	0.0	28,493
Dairy Employee and Visitor Trips	14,692	4	5	0.0	16,282
Dairy Electricity Consumption	170,925	7	2	0.0	171,566
Dairy Refrigeration	0	0	0	5.8	85,840
Dairy Manure Decomposition	0	143,128	1,608	0.0	4,057,340
Dairy Enteric Digestion	0	114,340	0	0.0	2,858,495
Feedlot Manure Decomposition	0	451	77	0.0	34,350
Feedlot Enteric Digestion	0	10,541	0	0.0	263,522
Total	509,898	268,485	5,424	6	8,924,162

Notes:

1. Emissions represent the future (10 year horizon) emissions (assuming an annual growth rate of 1.5%) plus existing emissions shown in Table 3.7-1.
2. Metric Ton = 1,000 kg = 1.1 short tons.
3. *CO*₂*e* = carbon dioxide equivalent emissions, which is the sum of all emissions after multiplying by their global warming potentials. *GWP*s are 1 for *CO*₂, 25 for *CH*₄, 298 for *N*₂*O*, and 14,800 for *HFC-23* (Table A-1, 40 *CFR* Part 98).
4. Emission estimates for all source categories except for manure decomposition and enteric digestion have been pulled from analyses completed for the Tulare County *ACFP* Update *EIR*. See Appendix B to the Draft Dairy *CAP*.
5. Details regarding the manure decomposition and enteric digestion emission estimates can be found in Appendix A to the Draft Dairy *CAP*.

As shown in Table 3.7-1, the total 2013 existing dairy and feedlot emissions are estimated to be 7,492,843 million metric tons of *CO*₂*e* (*MMT**CO*₂*e*) per year. Table 3.7-2, the total dairy and feedlot 2023 emissions are estimated to be 8,924,162 *MMT**CO*₂*e* per year. Between 2013 and 2023, total *GHG* emissions would increase from about 7.5 *MMT**CO*₂*e* to 8.9 *MMT**CO*₂*e*, an increase of about 1.4 *MMT**CO*₂*e*.

GHG reduction measures in the Draft Dairy *CAP* would reduce this projected increase in *GHG* emissions. However, the Draft Dairy *CAP* does not quantify the extent of this reduction due to the variations in operations at individual facilities and the consequent difficulty in providing reliable quantification of potential aggregate reductions.

Conclusion: Because the proposed Program would result in a substantial net increase in *GHG* emissions, this impact is *significant*.

Mitigation Measure #3.7.1: The Draft Dairy CAP identifies all potentially feasible *GHG* reduction strategies for dairies and other bovine facilities. Because of the site-specific variations in individual facilities, some emissions reductions measures are likely to be feasible at most facilities (Category A), but some are not (Category B). Feasible project-specific *GHG* reduction measures will be adopted as *CEQA* mitigation measures when the County approves expanded or new facilities under the *ACFP*; project-specific *GHG* reductions achieved by project-specific mitigation measures will be quantified at that time. The County will require, as a component of the *ACFP* Annual Compliance Report, owners to submit evidence that adopted *GHG* mitigation measures are being implemented. If there is evidence of non-compliance, the County will require the owner to submit a Corrective Action Plan.

Feasibility of Digesters

The use of dairy manure digesters is often discussed as a method of reducing methane emissions from manure because it has been recognized as the most effective means of reducing animal-related emissions, which represent the most significant source of dairy-related *GHG* emissions. Mandatory implementation of digesters as a mitigation measure is considered economically infeasible and would be inconsistent with the Scoping Plan's designation of digesters as a voluntary approach due to the need for financial incentives to offset the significant costs. If digesters were required by the County, the resulting emissions reductions would not qualify as voluntary emissions reductions eligible for offsets under the Cap-and-Trade Program's voluntary digester protocol.

As for the economic considerations, the Manure Digester and Co-Digester Facilities Draft *EIR*¹¹ prepared in 2010 for the Central Valley Regional Water Control Board notes, on pages 4-7:

“It is acknowledged that currently, dairy digester facilities in California face difficult economic conditions; capital requirements are high and financial return from the systems do not justify the cost.” Most, if not all, of the systems have used government grants to help with initial development costs. Several factors would need to be necessary to develop up to 20 dairy digesters per year in Region 5. Key factors would include:

- Increased demand for new energy sources;
- Increased demand for local renewable energy sources;
- Increased incentives for co-digester facilities;
- Improvements in dairy digester technologies;
- Public financial support or the development of profitable business models; or
- Regulations that require the development of energy-producing dairy digester facilities for specified dairies.

Appendix O of the *RWQCB EIR* provides an evaluation of the economic and technical feasibility of digester technologies, including flaring, gas pipeline injection for off-site gas sales, and on-site energy production for on-site use or off-site sale, with respect to *GHG* emission reductions. Gas transmission pipeline injection for off-site gas sales are constrained by technological feasibility issues since many dairies are not located in an area where a gas transmission pipeline is available, and there are significant cost feasibility issues. Fuel cells have not yet been adequately demonstrated to be achieved in practice for dairies and are costly to operate; especially if there is no practical use for all of the energy generated by fuel cells. Microturbines have been demonstrated to be unreliable and costly. Flares are not cost effective because no useable energy can be generated from the flaring of biogas to offset the capital and maintenance costs. Internal combustion engines (unless electricity powered) result in an increase in criteria pollutant emissions requiring the installation of unreliable and costly pollution control devices in order to comply with the *SJVAPCD* nitrous oxide emission limit of 9 *ppmv* that is required as Best Available Control Technology (*BACT*) for new digester gas-fired engines installed in the San Joaquin Valley. As previously noted, the 2011 Supplement to the Scoping Plan recognizes that the equipment to meet those strict smog standards is either technologically infeasible or cost prohibitive without financial incentives.

For these reasons, digesters are considered infeasible and not proposed as a mandatory mitigation measure for new dairies and facility expansions. (Digesters are, however, included in the Dairy *CAP*'s list of potential *GHG* reduction strategies under Category B.)

Feasibility of Dairy Cow Housing (Vented Enclosures with Biofilters)

A second greenhouse gas (and air quality) mitigation measure that has been proposed to reduce animal-related emissions is housing of all or a portion of a dairy cow herd. This has been rejected because mandatory implementation of vented enclosures with biofilters as a mitigation measure may not be effective in substantially lessening *GHG* emissions and is considered economically infeasible.

Enclosed structures, with exhaust vented to a biofilter, have been shown to be an effective method of controlling *VOC* emissions for other operations (painting, coating, printing operations, etc.).¹² Biofilters are widely used in the swine industry for controlling *VOC* emissions. However, no data has been identified regarding the effectiveness of biofilters to control *CH₄* (methane) emissions. Furthermore, this technology has not yet been verified to work with enclosed dairy housing structures. Specifically, it is unclear whether biofilters would work with the high air flows required in enclosed dairy freestall housing structures.¹³

California has high ambient temperatures, and enclosed housing systems typically require air conditioners for the majority of the year. As a result, animal heat stress is a primary concern with using enclosed housing systems on California dairies if the enclosed housing systems are not air cooled.

Hypothetically, even if vented enclosures were to be used, adequate artificial ventilation and air conditioning would be required. The amount of ventilation and air conditioning would be dependent upon the design of the housing facility, climate, number of animals, and other

variables.¹⁴ While systems may vary, enclosed housing structures in the San Joaquin Valley would be expected to consume large amounts of energy due to the hot climate. Additionally, a back-up system might be required to prevent extreme heat stress and poor air quality in case of a power failure.¹⁵ The large energy requirements needed to cool the enclosed structure would result in an increase in *GHG* emissions from indirect electricity use.¹⁶ These emissions might offset the *GHG* reductions achieved if an enclosed structure and biofilter were used.

Capital and operating costs for housing and biofiltration for dairy cows in the San Joaquin Valley have been estimated by the Air District as a potential *VOC* reduction measure for a 3,500 milk cow dairy (Authority to Construct Application Review, Leemstra Cattle Company, September 5, 2007). The capital cost for the biofilter alone, not including housing or duct work, was estimated to be \$11,371,486. The resulting cost of *VOC* emission reductions was estimated to range from \$67,584 to \$86,548 per ton, far in excess of the District's *BACT* standard of \$17,500 per ton. Annual operating costs were estimated to be \$1,635,363 to \$1,850,657 per year. Such costs clearly indicated that the mitigation measure, whether designed for *VOC* or greenhouse gas reduction, was infeasible for that project and, by extension, for other proposed new dairy facilities or facility expansions in Tulare County.

The Scoping Plan Supplement recognized these limitations, concluding that barn enclosures to trap methane constitute an undemonstrated technology and, even if it could be shown to successfully separate methane, would involve cost barriers similar to digesters and could negatively impact animal health and welfare. As a consequence, the Scoping Plan Supplement finds direct regulatory approaches, such as requirements for digesters and enclosed freestalls, to be infeasible.¹⁷

Significance after Mitigation: Because of the current infeasibility of avoiding or substantially lessening the proposed Program's net increases in *GHG* emissions, this impact is considered *significant and unavoidable*.

**Impact #3.7.2 - Inconsistent with Tulare County's General Plan Climate Action Plan or TCAG's RTP/SCS:
[Evaluation Criteria (b)]**

The Tulare County General Plan *CAP* intentionally did not cover dairies and feedlots, and expressly provided that a separate *CAP* would be prepared in conjunction with the *ACFP* Update to specifically address dairies and feedlots. Accordingly, the Draft Dairy *CAP* is intended to present up-to-date information and analysis concerning dairy and feedlot *GHG* emissions and approaches for reducing those emissions in response to the County's directive in the 2030 General Plan Update. The preliminary references to dairy and feedlot emissions in the County General Plan *CAP* were intended to be superseded and replaced by the in-depth analysis of the Draft Dairy *CAP*. The Draft Dairy *CAP* is inconsistent with various procedural aspects of the General Plan *CAP*, in particular the proposed identification of a *GHG* reduction target for dairies and other bovine facilities. However, the Draft Dairy *CAP* was intended to supersede any such inconsistencies as to dairies and feedlots.

The *TCAG RTP/SCS* includes an *SCS* that achieves regional *GHG* reduction targets for passenger vehicles. The *SCS* land use scenario that is based on the adopted general plans of Tulare County, as well as the eight cities within the County. Because the proposed Program's projected growth in dairies and other bovine facilities is accounted for in the Tulare County General Plan, the proposed Program is also consistent with *SCS* land use scenario. Other major components of the *TCAG RTP/SCS* include a housing needs analysis, and transportation network improvements and strategies. None of the proposed Program features would conflict with these components.

Conclusion: The proposed Program, specifically the Draft Dairy *CAP*, conflicts with certain procedural aspects of the Tulare County General Plan *CAP*, and does not conflict with the *TCAG RTP/SC*. It is uncertain whether the procedural inconsistencies with the General Plan *CAP* would lead to *GHG* emissions increases greater than estimated in Impact #3.7.1, but to be conservative this impact is considered *significant*.

Mitigation Measure #3.7.2: See mitigation measure for Impact #3.7.1.

Significance after Mitigation: See discussion for Impact #3.7.1.

**Impact #3.7.3 - Inconsistent with the State's Ability to Achieve AB 32, EO B-30-15, and S-3-05 Emissions Reductions Targets:
[Evaluation Criteria (c)]**

The *AB 32* Scoping Plan presents measures needed to reduce the state's *GHG* emissions to 1990 levels by 2020. The Scoping Plan does not provide for any reductions in animal-related emissions and no targets for animal-related *GHG* emission reduction are imposed for dairies and feedlots in order to meet the state's 2020 reductions under *AB 32*. Therefore the proposed Program's *GHG* emissions increases do not conflict with the Scoping Plan's provisions to meet the statewide 2020 target.

AB 32 sets a statewide target of reducing *GHG* emissions to 1990 levels by 2020, *EO B-30-15* sets a statewide target of reducing emissions to 40% below 1990 levels by 2030, and *EO S-3-05* sets a statewide target of reducing *GHG* emissions to 80% below 1990 levels by 2050. There is no requirement that the proposed Program's emissions be reduced by the same percentage as the statewide percentage in order for the state to achieve these targets. While the Scoping Plan does not currently require emissions reductions from the dairy sector to meet 2020 targets, the First Update, as previously referenced, recommends consideration by the interagency working group of agriculture sector emissions reduction planning targets for the post-2020 time frame and 2050. The Draft Dairy *CAP* anticipates the possibility of changes in approach in meeting 2030 and 2050 statewide emissions reduction targets and provides for future updates to the Dairy *CAP* in response to such changes. In addition, Section 8 of the Draft Dairy *CAP* includes specific County initiatives to promote and incentivize the utilization of voluntary programs and subsidies for dairy manure digesters. The proposed Program's *GHG* emissions impacts are nevertheless considered significant because at this time *CARB*'s approaches in meeting statewide targets beyond 2020 as it relates to animal-related emissions are not known and such *GHG* emissions would increase through the year 2023 under the proposed Program, rather than decrease on trajectories similar to those anticipated in *AB 32* and specified in the Executive Orders.

GHG reduction measures in the Draft Dairy *CAP* would reduce the proposed Program's net increase in *GHG* emissions. However, the Draft Dairy *CAP* does not quantify the extent of this reduction due to the variations in operations at individual facilities and the consequent difficulty in providing reliable quantification of potential aggregate reductions.

Conclusion: Because the proposed Program would be inconsistent with the state's ability to achieve *AB 32*, *EO B-30-15*, and *S-3-05* emissions reductions targets beyond 2020, this impact is *significant*.

Mitigation Measure #3.7.3: See mitigation measure for Impact #3.7.1.

Significance after Mitigation: See discussion for Impact #3.7.1.

**Impact #3.7.4 - Use Energy in an Inefficient, Wasteful, or Unnecessary Manner:
[Evaluation Criteria (d)]**

For purposes of this analysis, a significant impact would occur if the Program involved inefficient, wasteful or unnecessary consumption of energy.

One of the purposes of the Draft Dairy *CAP* is to identify and formulate a comprehensive list of possible strategies to reduce energy consumption by new dairies and expansions of existing facilities. The Category A measures include meeting or exceeding Title 24 strategies in climate-controlled buildings; providing verification of energy savings; and installing energy-efficient boilers, appliances and lighting. Therefore, because the proposed Program would promote implementation of these measures, it would not involve inefficient, wasteful or unnecessary consumption of energy.

Conclusion: This impact is *less than significant*.

Mitigation Measures: None are required.

**Impact #3.7.5- Increased Reliance on Fossil Fuels and Decreased Reliance on Renewable Energy Sources:
[Evaluation Criteria (e)]**

For purposes of this analysis, a significant impact would occur if the Program either increased reliance on fossil fuels or decreased reliance on renewable energy sources.

The Draft Dairy *CAP* incorporates strategies to promote the use of renewable energy sources as Category B measures, including establishing on-site renewable or carbon-neutral energy systems, utilizing solar power, wind power and digesters for energy-production, and utilizing alternative-fueled vehicles and electric or hybrid vehicles for both construction and on-site operations. Therefore, because the proposed Program would promote implementation of these measures, it would not increase reliance on fossil fuels or decrease reliance on alternative energy sources.

Conclusion: This impact is *less than significant*.

Mitigation Measures: None are required.

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- ¹² Dairy Permitting Advisory Group (DPAG). 2006. Recommendations to the San Joaquin Valley Air Pollution Control Officer Regarding Best Available Control Technology for Dairies in the San Joaquin Valley http://www.valleyair.org/busind/pto/dpag/dairy_permitting_advisory_group.htm. Accessed April 2015.
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- ¹⁵ Bagley, C.V. Housing ventilation and calf health.
- ¹⁶ U.S. EPA 2004. Indirect emissions from purchase/sales of electricity and steam. <http://www.epa.gov/stateply/resources/cross-sector.html>. Accessed May 2015.
- ¹⁷ http://www.arb.ca.gov/cc/scopingplan/document/final_supplement_to_sp_fed.pdf, page 72. Accessed May 2015.

3.8 Hazards and Hazardous Materials

INTRODUCTION

This section addresses hazardous materials and public safety issues related to the proposed Program. The regulatory setting section includes a description of applicable federal, State and local plans and/or programs. The environmental setting presents an overview of existing hazards and public safety issues specific to the County. These issues include hazardous materials, airport safety, and wildland fire hazards. A description of the potential impacts of the proposed Program is provided and includes the identification of feasible mitigation measures to avoid or lessen impacts.

IMPACT EVALUATION

CEQA evaluation criteria for evaluating adverse impacts are:

Would the project:

- a) *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*
- b) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*
- c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste in the vicinity of an existing or proposed school?*
- d) *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*
- e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?*
- f) *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?*
- g) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*
- h) *Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

Hazardous Materials

The following environmental and regulatory settings were, in part, summarized from information contained in the Tulare County General Plan 2010 Background Report.¹

REGULATORY SETTING

Federal Regulations

A principal federal legislative regulation is the Resource Conservation and Recovery Act (*RCRA*) which is administered by the United States Environmental Protection Agency (*EPA*). *RCRA* places reporting, permitting, and operational control requirements on sources that generate, treat, store, or dispose of hazardous waste. The federal Hazardous Materials Transport Act, administered by the U.S. Department of Transportation, requires detailed manifesting and reporting of hazardous materials shipped on the U.S. highway system; it also contains packaging requirements for such shipped materials. The Clean Water Act, administered by *EPA*, controls the discharge of hazardous materials or hazardous waste to waters of the U.S. or to local wastewater treatment plants. A discussion of the Clean Water Act can be found in Section 3.9 "Public Facilities, Recreation and Services". Regulations governing hazardous wastes and materials are discussed below.

Resource Conservation and Recovery Act of 1976 (RCRA)

RCRA is the nation's hazardous waste control law. It defines hazardous waste, provides for a cradle-to-grave tracking system and imposes stringent requirements on treatment, storage and disposal facilities. *RCRA* requires environmentally sound closure of hazardous waste management units at treatment, storage, and disposal facilities. The *EPA* is the principal agency responsible for the administration of *RCRA*.

Occupational Safety and Health Act of 1970

The Occupational Safety and Health Administration (*OSHA*) prepares and enforces occupational health and safety regulations with the goal of providing employees a safe working environment. *OSHA* regulations apply to the workplace and cover activities ranging from confined space entry to toxic chemical exposure. *OSHA* regulates workplace exposure to hazardous chemicals and activities by promulgating regulations specifying workplace procedures and equipment.

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act (implemented by the U.S. Department of Transportation) regulates the interstate transport of hazardous materials and waste. This act specifies driver-training requirements, load labeling procedures, and container design and safety specifications. Transporters of hazardous wastes must also meet the requirements of additional statutes such as *RCRA*, discussed previously.

State Regulations

California State agencies can accept the delegation of federal responsibility for hazardous materials and hazardous waste management. The Porter-Cologne Water Quality Control Act authorizes the State Water Resources Control Board (*SWRCB*) and the Regional Water Quality Control Board (*RWQCB*'s) to implement the Clean Water Act. The Hazardous Waste Control Act of 1977, and recent amendments to its implementing regulations, authorizes the Department of Health Services (*DHS*) to assume the lead role in administering the *RCRA* program. The Hazardous Substances Highway Spill Containment Act delegates to the California Highway Patrol (*CHP*) the authority to respond to spills of hazardous materials on the State's highway system.

State Water Resources Control Board (SWRCB)

Acting through the *RWQCB*'s, the *SWRCB* regulates surface and groundwater quality pursuant to the Porter-Cologne Water Quality Act, the federal Clean Water Act, and the Underground Tank Law. Under these laws, *RWQCB*'s are authorized to supervise the cleanup of hazardous waste sites referred by local agencies in those situations where water quality may be affected.

California Occupational Safety and Health Administration (Cal/OSHA)

Cal/OSHA is the State agency responsible for assuring worker safety in handling and the use of chemicals in the workplace. *Cal/OSHA* assumes primary responsibility for developing and enforcing State workplace safety regulations. Because California has a federally approved *OSHA* program, it is required to adopt generally more stringent regulations than the corresponding federal regulations. *Cal/OSHA* regulations concerning the use of hazardous materials in the workplace are included under Title 8 of the California Code of Regulations (*CCR*).

Hazardous Materials Transport

California law requires that hazardous waste (as defined in California Health and Safety Code Division 20, Chapter 6.5) be transported by a California registered hazardous waste transporter that meets registration requirements. State agencies tasked with primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol (*CHP*) and the California Department of Transportation (Caltrans). Together, these agencies determine container types which may be used and license hazardous waste haulers for hazardous waste transportation on public roads. The *CHP* is responsible for designating State and federal roadways as hazardous materials truck routes for three categories of hazardous materials: explosives, poisons that can be inhaled, and radioactive material. These categories of hazardous materials can only be transported on routes designated by the *CHP*.

Universal Waste Rule

Universal wastes are hazardous wastes that are generated by a wide variety of sources. Examples include cathode ray tubes (*CRTs*; including televisions and computer monitors),

consumer (non-automotive) batteries, fluorescent tubes and other mercury-containing lamps, and consumer electronics. Universal waste rules allow common, low-hazard wastes to be managed under less stringent requirements than other hazardous wastes. California's Universal Waste Rule became effective on February 8, 2002. Since that time, several other common wastes have been added to the list of universal wastes. These include mercury wastes, consumer electronic devices, and *CRTs*. Other wastes may be added to the list over time. In general, universal wastes may not be discarded in ordinary solid waste landfills.

Local Regulations

Local agencies (counties and cities) implement federal and state regulations for production, usage, disposal, and transport of hazardous materials.

Tulare County Health and Human Services Agency, Environmental Health Division

The Unified Hazardous Waste and Hazardous Management Regulatory Program (*SB 1082*, Health and Safety Code Section 25260 et seq) is a State and local effort to consolidate, coordinate, and make consistent existing programs regulating hazardous waste and hazardous materials management. The Unified Program is implemented at the local level by a Certified Unified Program Agency (*CUPA*).

The Tulare County Health and Human Services Agency (*TCHHSA*), Environmental Health Division (*EHD*) of the County of Tulare is the *CUPA* for all cities and unincorporated areas within Tulare County. The *CUPA* designation was created by the California legislature to minimize the number of inspections and different fees for businesses. The *EHD* was certified as the County *CUPA* in December 1996. As the *CUPA*, the *EHD* operates the following programs in the County:

- Aboveground Storage Tank (*AST*) Program Spill Control and Countermeasure Plan and requirements;
- California Accidental Release Prevention (*CalARP*) Program;
- Hazardous Materials Release Response Plans & Inventory (Hazardous Materials Business Plan);
- Hazardous Waste Generator and Onsite Hazardous Waste Treatment (Tiered Permit);
- Underground Storage Tank (*UST*) Program; and
- Hazardous Material Inventory Requirements of Article 80 of the Uniform Fire Code.

Under a contract with the *SWRCB*, the County of Tulare, through the *EHD* conducts the Local Oversight Program, which provides oversight of corrective action at leaking underground fuel tank (*LUFT*) sites throughout Tulare County.

Tulare County Hazardous Waste Management Plan²

The County of Tulare has prepared a Hazardous Waste Management Plan (*HWMP*) in accordance with California Health and Safety Code Section 25135 et seq. The Tulare County *HWMP*, which was developed in May 1989, identifies hazardous waste generators within the County, the amounts and types of waste produced, and projected waste generation. In addition, the *HWMP* identifies the need for any potential future locations of treatment, storage, and disposal facilities and includes policies for and potential impacts from the management of hazardous waste within the County. The major goal of the *HWMP* is to reduce the need for new hazardous waste facilities by reducing waste at its source through recycling, reduced use of hazardous materials, and public education.

Tulare County Operational Area Emergency Operations Plan³

The Tulare County/Operational Area Emergency Operations Plan (*EOP*) addresses planned response to extraordinary emergency situations associated with natural disasters, technological emergencies, and national security-related events in, or affecting Tulare County. The *EOP* and the County/Operational Area's comprehensive emergency management program and organization meet all requirements of the California Standardized Emergency Management System (*SEMS*) and the National Incident Management System (*NIMS*) as both systems are defined by the State of California.

The *EOP* establishes policies, procedures and an Emergency Management Organization (*EMO*), and assigns roles and responsibilities to ensure the effective management of emergency operations within the Tulare Operation Area (*OA*). The *EOP* addresses the County/Operational Area's planned response to disasters and supports the California Emergency Plan.

This Plan establishes:

- The conceptual framework for emergency management in the Tulare Operational Area, including lines of authority and coordination;
- Assigned roles and responsibilities of County staff;
- The policies and procedures required to protect the health and safety of County/*OA* residents and visitors, public and private property, and the environment from the effects of natural, technological and national security-related emergencies; and
- The operational concepts and procedures associated with the County/*OA* Emergency Operations Center (*EOC*) activities, and the recovery process.

This Plan is:

- Intended to facilitate multi-agency and multi-jurisdiction coordination, particularly between the County/*OA*, its cities and special districts, and state and federal agencies; and

- An operational plan as well as a reference document; it may be used for pre-emergency planning, as well as for emergency operations. Public agencies, private enterprises and volunteer organizations assigned roles and responsibilities in this Plan are encouraged to develop Standard Operating Procedures (*SOPs*) and emergency action checklists based on the provisions in the Plan.

Household Hazardous Waste

The *TCRMA* Solid Waste Division operates a Household Hazardous Waste program. Under this program, residents in the County can safely dispose of hazardous materials, such as pesticides, household cleaners, and paint products. Additionally, residents can utilize this program to dispose of universal wastes, which includes consumer batteries, *CRTs* (e.g., televisions and computer monitors), fluorescent tubes and other mercury-containing lamps, and consumer electronics.⁴

Most Saturdays the County operates a Permanent Household Hazardous Waste Collection Facility (*HWCF*) located in Visalia. The County also hosts mobile collection events throughout the year.

Used Oil. Used motor oil can be disposed of by County residents at the *HWCF* or at a number of used motor oil collection locations throughout the County. These locations are generally auto repair shops and auto parts stores.

ENVIRONMENTAL SETTING

Hazardous Waste

Hazardous wastes generated by residents, agriculture, and businesses in the County contribute to environmental and human health hazards. Proper waste management and disposal practices can minimize public concern over toxicity and the contamination of soils, water, and air.

The Environmental Protection Agency (*EPA*) and the Resource Conservation and Recovery Act (*RCRA*) describe Hazardous Waste: “Hazardous waste is waste that is dangerous or potentially harmful to our health or the environment. Hazardous wastes can be liquids, solids, gases, or sludges. They can be discarded commercial products, like cleaning fluids or pesticides, or they by-products of manufacturing processes”. Therefore, hazardous waste must first be considered solid waste or inherently waste-like material. The *EPA* has a user friendly Hazardous Waste Listings that breaks this topic down and can be found at <http://www3.epa.gov/epawaste/hazard/wastetypes/pdfs/listing-ref.pdf>.

Hazardous wastes are defined as materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal. According to Title 22 of the *CCR*, in California hazardous materials and hazardous wastes are classified according to four properties: toxic, ignitable, corrosive, and reactive (*CCR*, Title 22, Chapter 11, Article 3).¹

A hazardous material is defined by the California Code of Regulations (*CCR*) as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating illness; or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of (*CCR*, Title 22, Division 4.5, Chapter 10, Article 2, Section 66260.10)¹. Examples include asbestos, lead, mineral acid sulfides, and many more. Hazardous materials are described as materials that could cause injury or death and should not be taken lightly. Most hazardous materials have the ability to do one of the following: ignite, corrode, cause a reaction to air, are toxic, pathogenic, carcinogenic, infectious, etiologic, and lastly can be harmful.

Hazardous Materials (Cortese List) Sites

The Tulare County list of hazardous waste and substances sites (Cortese list) is shown in Table 3.8-1.

**Table 3.8-1
Hazardous Waste and Substance Site⁵
(Cortese List)**

Site Name	Location
Country Club Cleaners	2000 West Whitendale, Visalia, California 93277
Former Village Cleaners	2615 South Mooney Boulevard, Visalia, California 93277
Former Webster Cleaners	4634 West Mineral King Avenue, Visalia, California 93291
Goshen Avenue and Shirk Road Site	6941 and 6707 West Goshen Avenue, Visalia, California 93291
Kaweah – Shannon and Ritchie Shop Site	11878 Avenue 328, Visalia, California 93291
Goshen Carbon Tet Plume	Betty Drive, Goshen, California 93227
Lamour’s Cleaners	2911 South Mooney Boulevard, Visalia, California 93277
Miller’s Cleaners	2235 West Whitendale Avenue, Visalia, California 93277
Millers Dry Cleaners	110 North Willis, Visalia, California 93291
Mission Uniform	520 East Mineral King Avenue, Visalia, California 93292
One Hour Martinizing	717 West Main Street, Visalia, California 93291
One Hour Martinizing	1841 South Mooney Boulevard, Visalia, California 93277
Visalia Dry Cleaner Investigation	Central City Area, Visalia, California 93277
Beckman Instruments, Porterville Plant	167 West Poplar Avenue, Porterville, California 93257
Parmenter and Bryan	13133 Avenue 416, Orosi, California 93647
Harmon Field	1494 South Airport Drive, Pixley, California 93256
Southern California Gas	216 South O Street, Dinuba, California 93618

Public Airports and Private Airstrips

There are seven public use airports in the County. The public owned airports are Visalia Municipal, Porterville, Municipal, Woodlake, Mefford Field and Sequoia Field. Two of the airports are private airports open to public use (Eckert and Thunderhawk). There are also a number of privately owned, special use, airports. According to Tulare County records, Alta and Pixley (Harmon Field) airports are currently closed and Badger Field is under Federal Aviation Administration (*FAA*) recertification as a restricted private airfield.

Only Visalia, Porterville, Mefford Field (City of Tulare) airports generate significant air traffic. The only passenger air service within the County is provided at the Visalia Municipal Airport.¹

IMPACTS

Impact #3.8.1 - Operational Hazards from Routine Use or Upsets/Accidents: [Evaluation Criteria (a), (b)]

Hazardous materials are used in dairies and in some bovine facilities operations. The use of fuel stored in above ground tanks, lubricants, and cleaning solutions may be required for the operation and maintenance of equipment. Pesticides for the control of vectors, and medicines, may be used. Agricultural chemicals, including insecticides, herbicides and fertilizers are used on dairy croplands.

Construction of new or expanded dairy and other bovine facilities, including Dairy *CAP GHG* reduction measures with construction impacts, could create hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving hazardous materials release.

Siting criteria included in the Draft *ACFP* (Policies 2.2-2 and 2.2-3) would reduce the potential for public exposure to hazardous materials and waste. These include minimum buffering distances for new facilities from urban area boundaries, public parks, schools, dwelling units, and agricultural and residential land uses.

New and expanding dairies and feedlots must comply with the Tulare County Animal Confinement Facilities Plan; a copy of this plan is attached as Appendix A. These dairies and feedlots must be located within designated agricultural zoned areas that are compatible with surrounding land uses including urban areas, single-family homes, and public and private schools and public parks. The *ACFP* requires that these new and expanding facilities must also comply with *CVRWQCB* and *SJVAPCD* rules and regulations.

Applicants for new and expanding dairies and feedlots are also required to provide technical reports with measures to reduce identified impacts that may, at the County's option, include any of the following:

- Dairy *CAP* Consistency Checklist;
- Geological – Hydrological Report;
- Health Risk Assessment;
- Traffic Evaluation;
- Water Availability Evaluation for Onsite Wells;
- Comprehensive Nutrient Management Plan (*CNMP*);
- Biological Resources Survey;
- Cultural Resources Evaluation;
- Integrated Pest Management Plan;
- Dead Animal Disposal Plan;
- Hazardous Materials Business Plan; and

- Odor Control Measures.

Conclusion: The existing rules and regulations to be enforced by the County, *CVRWQCB*, and *SJVAPCD* assure that impacts associated with routine use of hazardous materials and accident/upset conditions would be at a *less than significant* level.

Mitigation Measures: None are required.

**Impact #3.8.2 - Hazardous Emissions, Materials, and Waste Impacts on Schools:
[Evaluation Criteria (c)]**

There are four dairy facility sites and two feedlots presently located within one-half mile of existing school campuses. The schools are:

- Oak Valley Elementary School - one feedlot;
- Sundale Union Elementary School - one feedlot and one dairy; and
- Waukena Elementary School - three dairies.

The Draft *ACFP* includes a siting criterion requiring that new or expanding dairies and other bovine facilities and feedlots not be located within one-half mile of an existing or proposed school.

The *ACFP* one-half mile separation has been established to reduce the impact of operational air emissions of reactive organic gases (*ROG*) that are principally generated by manure decomposition, exhaust from equipment used at the dairy, and truck and vehicles, also, *PM₁₀* and *PM_{2.5}* generated by cattle movement and farming operations. Expansions of existing dairies may not include any expansion of confined animal or manure facilities that would be within the half-mile buffer zone or closer to schools than currently located.

Conclusion: The comprehensive air pollution controls enforced by the *SJVAPCD* and the half-mile separation established by the *ACFP*, together with other existing rules and regulations to be enforced by the County and the *CVRWQCB*, assure that impacts of hazardous emissions, materials, and waste on existing and proposed schools would be *less than significant*.

Mitigation Measures: None are required.

**Impact #3.8.3 - Hazardous Materials Sites:
[Evaluation Criteria (d)]**

As shown in Table 3.8-1, there are 17 hazardous waste and substance sites in Tulare County. All but two of these sites are located within the following urban areas: Visalia, Goshen, Porterville, Dinuba, Orosi, and Pixley. None of these sites are agricultural land zoned for dairy operations.

Conclusion: No expansion of existing or proposed new or other bovine facilities will be located on a hazardous materials site. The proposed Program will result in *no impacts*.

Mitigation Measures: None are required.

**Impact #3.8.4 - Airport Hazards:
[Evaluation Criteria (e) (f)]**

As described in the Tulare County Comprehensive Airport Land Use Plan:

Despite stringent laws governing aircraft and airport maintenance and pilot training, history demonstrates that aircraft accidents are going to occur. Although the risk to persons on the ground being killed or injured in an aircraft accident is small, such an accident is a high-consequence event, and particularly so if the accident location coincides with a large concentration of persons on the ground. For this reason, airport safety zones are needed to define the nature of the risk and to minimize the number of persons who may be exposed to air crash hazards. Six safety zones for County airports are the:

1. *Runway Protection Zone*
2. *Inter Approach/Departure Zone*
3. *Inter Turning Zone*
4. *Outer Approach/Departure Zone*
5. *Sideline Zone*
6. *Traffic Pattern Zone*

The Tulare County Comprehensive Airport Land Use Plan addresses public use airports that are publicly or privately owned airports that offer the use of its facilities to the public and have been issued a California Airport Permit by the California Department of Transportation (Caltrans) Division of Aeronautics. There are seven currently permitted airports in Tulare County that meet the “public use” criterion.

- Visalia Municipal Airport;
- Porterville Municipal Airport;
- Tulare Municipal Airport – Mefford Field;
- Woodlake Municipal Airport;
- Sequoia Field;
- Exeter Airport (formerly Thunderhawk Field); and
- Eckert Field

All of the above airports are situated in urban areas or rural areas that are not zoned for dairy or other bovine facility use. Private airstrips are not identified by, nor are they regulated by, Caltrans.

Dairies and confined-bovine facilities are permitted in Safety Zones 2, 3, 4 and 6, but prohibited in Safety Zones 1 and 5. Zone 1 is a trapezoidal area located immediately off each end of a runway. This area is defined by the Federal Aviation Agency (FAA) which recommends it be a part of the airport property due to its very high risk factors. Aircraft fly over this area at altitudes below 200 feet. Zone 5 encompasses close-in areas lateral to the runway. These areas are typically within the airport property, not normally overflowed.

No expanded or new dairy or other bovine facilities would be permitted in Safety Zones 1 or 5, under the Comprehensive Airport Land Use Plan. Safety Zone 1, Runway Protection Zone is a part of the airport property due to very high risk factors. Aircraft over fly this area at altitudes below 200 feet. Caltrans research indicates that 20 percent of near-runway accidents occur in this zone. Safety Zone 5, Sidelane Zone, encompasses areas lateral to the runway. These areas are typically within the airport properties. Such areas are not normally over-flown and the primary risk is from twin-engine aircraft losing directional control on takeoff.

Conclusion: Because the proposed Program would not create safety hazards near public airports or private airstrips, impacts are *less than significant*.

Mitigation Measures: None are required.

**Impact #3.8.5 - Emergency Response/Evacuation Plans and Wildland Fires:
[Evaluation Criteria (g) (h)]**

New or expanded dairies or bovine facilities would not have any adverse effects on the County's adopted emergency response and emergency evacuation plans. The proposed Program would not alter existing traffic routes, create significant vehicle delays (see Section 3.14), or interfere with communication facilities. Animal confinement facilities must continue to be located in intensive agricultural areas. Therefore, there is little probability that these facilities could be impacted by wildland fires.

Conclusion: Because the proposed Program would not interfere with adopted emergency response or emergency evacuation plans, or expose people to significant wildfire risks, proposed Program impacts are *less than significant*.

Mitigation Measures: None are required.

REFERENCES

¹ County of Tulare. 2010. General Plan Background Report. <http://generalplan.co.tulare.ca.us>

² The *TCHWMP* has not been updated since adoption and is still being implemented. Source: Joel Martens, Supervising Environmental Health Specialist, environmental Health Services, County of Tulare, January 7, 2016

³ Joel Martens, Supervising Environmental Health Specialist, environmental Health Services, County of Tulare, January 7, 2016

⁴ County of Tulare. 2010. General Plan Background Report. Page 8-42. Tulare County, CA. <http://generalplan.co.tulare.ca.us>

⁵ Department of Toxic Substances Control ENVIROSTOR
http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global

3.9 Hydrology/Water Quality

INTRODUCTION

This section addresses potential impacts to water resources, water quality, and drainage. The regulatory setting provides an overview of applicable federal, State, and local regulations. The environmental setting includes discussions of existing surface and groundwater resources, water quality issues, and drainage and flooding.

IMPACT EVALUATION CRITERIA

CEQA Criteria for evaluating hydrology and water quality impacts are:

Would the project:

- a) Violate any water quality standards or waste discharge requirements?*
- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?*
- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-or off-site?*
- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?*
- e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?*
- f) Otherwise substantially degrade water quality?*
- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?*
- h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?*
- i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam, inundation by seiche, tsunami, or mudflow?*

j) *Inundation by seiche, tsunami or mudflow?*

REGULATORY SETTING

Federal and State

The following environmental and regulatory settings were summarized, in part, from information contained in the Tulare County General Plan 2010 Background Report.

Federal, State and local agencies and statutory authorities relevant to water (including groundwater) resources, water quality and drainage are applicable. Water resources in California are managed by a complex system of federal, State, and local regulations. Oversight of these regulations is conducted by a similarly complex network of federal, State, and local agencies. Water quality regulations include federal and State oversight of point and non-point pollutants, protection of wetlands, and oversight of wastewater and recycled water. The regulations discussed below also include federal, State, and local regulations concerning flood management and drainage.

Clean Water Act

The federal Clean Water Act establishes the basic structure for regulating point source discharges of pollutants into "Waters of the United States." The act specifies a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Its regulations cover streams, wetlands, and other natural waterways as well as establish treatment standards for municipal wastewater facilities.

Section 401 requires every applicant for a federal permit or license for any activity that may result in a discharge to a water of the U.S. to obtain a water quality certification that the proposed activity will comply with State water quality standards. A Section 401 certification for land development projects is often required from a Regional Water Quality Control Board (*RWQCB*) office in coordination with a Section 404 dredge and fill permit.

Section 402 regulates point-source discharges to surface waters through the National Pollution Discharge Elimination System (*NPDES*) program. In California, the State Water Resources Control Board (*SWRCB*) oversees the *NPDES* program, which is administered by the Regional Water Quality Control Boards. The *NPDES* program provides for both general permits (those that cover a number of similar or related activities) and individual permits. The *RWQCB* manages the *NPDES* program including the General Construction Stormwater *NDPES* Permit program.

California Water Code

The California Water Code establishes governing law pertaining to all aspects of water management in California. The California Water Code establishes the Department of Water Resources (*DWR*) as the primary research, supply development, and management agency for water, and the *SWRCB* for overall water quality policy development and water rights issues. The *SWRCB* is responsible for overseeing the water rights and water quality functions of the State.

There are nine *RWQCBs* that are responsible for the regulation, enforcement, and protection of the beneficial uses of water.

Under Water Code § 10004 - 10013, *DWR* is required to prepare and update the California Water Plan, a policy document that guides the development and management of the State's water resources. The plan is updated every five years to reflect changes in resources and urban, agricultural, and environmental water demands. It contains programs in managing demand and augmenting supply to balance water supply with demand.

Federal Emergency Management Agency (FEMA)

FEMA is the federal agency that oversees floodplains and manages the nation's flood insurance program. *FEMA's* regulations govern the delineation of floodplains and establish requirements for floodplain management. Tulare County Flood Control District, a countywide special district governed by the County Board of Supervisors, oversees the local flood program.

Central Valley Flood Protection Board

Any project encroaching into rivers, waterways, and floodways within and adjacent to federal- and State-authorized flood control projects or within designated floodways must receive approval from the State Central Valley Flood Protection Board (Flood Board; formerly the Reclamation Board). Under California Water Code § 8534, 8608, and 8710-8723, the Flood Board is required to enforce, within its jurisdiction, on behalf of the State of California, appropriate standards for the construction, maintenance, and protection of adopted flood control plans that will best protect the public from floods. The Flood Board's jurisdiction encompasses the Central Valley, including all tributaries and distributaries of the Sacramento and San Joaquin Rivers but excluding the Tulare and Buena Vista Basins.

California 2007 Flood Management Regulations

In 2007, the Legislature passed and Governor Schwarzenegger signed legislation to prompt California to improve its long term flood protection by better understanding the capacity of the Central Valley's levees, developing plans to better manage the flood protection system, and mandating that local land use planning and development identify the risks of flooding (*APA*, 2008). Local governments are also required to incorporate current information (using data from *FEMA*, *DWR*, and local drainage districts) about areas subject to flooding and drainage issues onto county flood maps. In California, all local governments including the County of Tulare, are also required to annually incorporate updated flood information into the County's General Plan Land Use Element, per Government Code Sections 65302(a) and, after January 2009, into the County General Plan Conservation and Safety Element, per Government Code Sections 65302(d) and (g). Although Tulare County is not included in the geographic area of the Central Valley Flood Protection Plan, it is subject to statewide requirements that require up- to-date flood-risk and drainage problem areas be identified, mapped, and addressed through County General Plan policies, maps and land use diagrams.

California Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, water quality objectives are expressed as limits or levels of water quality constituents or characteristics established for the purpose of protecting beneficial uses. The Act requires the *RWQCBs* to establish water quality objectives while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Designated beneficial uses, together with the corresponding water quality objectives and waste discharge requirements, also constitute water quality standards under the federal Clean Water Act. Therefore, the water quality objectives form the basis for meeting State and federal requirements for water quality control.

Under Resolution 68-16, the State's anti-degradation policy, a change in water quality is only allowed if the change is consistent with the maximum benefit to the people of the State, would not unreasonably affect the present or anticipated beneficial uses, and would not result in water quality lower than that specified in applicable water quality control plans.

Basin Plans and Water Quality Objectives

The Porter-Cologne Water Quality Control Act provides for the development and periodic review of water quality control plans (referred to as basin plans) that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. Basin plans provide the technical basis for determining waste discharge requirements and taking regulatory enforcement actions if deemed necessary. The project area is located within the jurisdiction of the Central Valley Regional Water Quality Control Board (*CVRWQCB*). A basin plan has been adopted for the Tulare Lake Basin,¹ which comprises the drainage area of the San Joaquin Valley south of the San Joaquin River and includes all of Tulare County west of the Sierra Nevada crest.

Waste Discharge Requirements for Dairies

The *CVRWQCB* has authority to regulate waste discharges that could affect the quality of the waters of the State, which includes both surface water and groundwater, and the prevention of nuisance, is found in the Porter-Cologne Water Quality Control Act (California Water Code Division 7). Regulation is accomplished through issuance of Waste Discharge Requirements (*WDRs*) or the waiver of such requirements. All confined animal facilities are subject to this regulatory authority.

General Order Waste Discharge Requirements for Existing Milk Cow Dairies, Order No. R5-2013-0122 rescinds and replaces Order No. R5-2007-0035, and Revised Order No. R5-2010-0118. It implements State laws and regulations. General order provisions for existing dairies are incorporated in the *WDRs* for new and expanding dairies, as applicable.

All dairies subject to this Order are required to:

- Comply with all provisions of the Orders;
- Have submitted a Waste Management Plan for the production area;

- Have developed and be implementing a Nutrient Management Plan (*NMP*) for all land application areas;
- Monitor wastewater, soil, crops, manure, surface water discharges, and storm water discharges;
- Monitor surface water and groundwater (individually or as part of a representative monitoring program);
- Keep records for the production and land application areas and discharges to surface water; and
- Submit annual monitoring reports.

In addition, the *CVRWQCB* has established regulatory programs for dairy manure digester and co-digester facilities, and for centralized dairy manure anaerobic digesters or co-digester facilities.

Enforcement of the regulations is principally the responsibility of the Regional Board, whose staff independently reviews annual reports submitted by dairies. Such reports include laboratory results and data from environmental testing, nutrient budgets and other key information. Inspectors also visit dairies, on average once every three years, to verify compliance on site, including integrity of waste control and nutrient delivery systems, proper record-keeping and other key information.

The major purpose of these regulations is to ensure responsible storage and use of manure as a crop fertilizer and soil amendment. Responsible use prevents unnecessary runoff or leaching of nitrogen compounds to the environment, where they can impact water quality and other environmental media. The *NMP* is designed to assure that the amount of nitrogen excreted by milking cows and support stock is in reasonable balance with the needs of crops grown at the dairy farm. *NMPs* direct that manure nitrogen in excess of crop needs be exported off the dairy to locations where it can be used by other sectors of agriculture or similar beneficial uses. Meanwhile, the remaining nitrogen used on the farm must be stored safely until it is used (the major purpose of the *WMP*) and then applied to crops when needed and in the amounts needed. Over-application or mistimed application of nitrogen fertilizers can result in unnecessary losses of nitrogen to the environment, both as seepage below the root zone (in the form of nitrate or other nitrogen compounds)² or as air emissions of ammonia gas, ammonium and nitrous oxide.³

The University of California suggested in 2005 that "... optimal N loading rates of 1.4 to 1.65 times the crop N harvest removal are practical and, based on field observations, achievable if the production field is properly managed."⁴ The UC assessment was the ultimate basis for performance standards set by the Regional Board in the General Order, which was adopted in 2007, then revised and re-issued in 2013. Both versions of the order contain nutrient uptake efficiency standards based on the UC recommendations.

Central Valley Regional Water Quality Control Board (Regional Board)⁵

Tulare County dairies are under the purview of the *RWQCB*'s Fresno office. In general, Tulare County dairies are inspected via on-site visits by *RWQCB* inspectors, at least once every three years. Dairies that have completed voluntary third-party compliance certification through the California Dairy Quality Assurance Program⁶ are inspected at least once every five years. Dairies with significant compliance issues receive more frequent follow-up inspections. Overall, between 55 and 60 dairies in the county are inspected annually.

When inspectors find violations, a system of progressive enforcement is used to encourage and achieve compliance. An early step in the process is issuance of a Notice of Violation, or *NOV*. Roughly 50 percent of *NOVs* are for violations that can be corrected and documented by the discharger and confirmed on the next inspection. For more serious violations, the *NOV* is the first step in a progressive enforcement process. If the discharger fails to come into compliance after an *NOV* is issued, the *RWQCB* can take formal enforcement action including issuance of a California Water Code Section 13267 Order (which requires submittal of a technical report), a Cease and Desist Order, a Cleanup and Abatement Order, or an Administrative Civil Liability (monetary penalty) if not corrected. For more egregious violations, any of the first steps (including the *NOV*) can be bypassed.

The *RWQCB* also works with industry groups to discuss compliance issues and forward information to facilitate compliance, and works with environmental justice groups to hear and follow up on their concerns.

California Department of Food and Agriculture, Milk and Dairy Food Safety Branch⁷

Although primarily for the purpose of ensuring milk quality and food safety, *CDFA*'s inspection program further supplements environmental inspections by other agencies. Dairies in Tulare County are inspected by employees of the county, who use a standardized scorecard, which is the same as the scorecard used statewide. Most dairies are inspected eight times annually. Among other aspects, inspectors check for proper drainage of corrals, ensure management practices are in place to prevent rodent infestations and excessive fly breeding, and proper use and storage of pesticides to prevent contamination of milk.

General Construction Stormwater NPDES Permit

The *CVRWQCB* administers the *NPDES* stormwater permitting program in the Central Valley Region for construction activities. Construction activities disturbing one or more acres of land are subject to the permitting requirements of the *NPDES* General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit). For qualifying projects, the project applicant must submit a Notice of Intent to the *RWQCB* to be covered by the General Construction Permit prior to beginning construction. The General Construction Permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (*SWPPP*), which must also be completed before construction begins.

The *SWPPP* must identify best management practices (*BMPs*) based on potential pollutants that are to be implemented to reduce construction impacts on receiving water quality. The *SWPPP* also

must include descriptions of *BMPs* to reduce pollutants in stormwater discharges after all construction phases are completed at a site (post-construction *BMPs*). The Construction General Permit also includes requirements for risk-level assessment for construction sites, a stormwater effluent monitoring and reporting program, rain event action plans, and maintaining numeric-action levels of *pH* and turbidity.

Streambed Alteration Agreement Program

Under Sections 1600-1616 of the California Fish and Game Code, any person, business, state or local government agency, or public utility that proposes an activity that would (1) substantially divert or obstruct the natural flow, (2) substantially modify the bed or bank of any river, stream, or lake, or (3) deposit or dispose debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake, is required to notify the Department of Fish and Game (*DFG*). The streambed alteration agreement that the notifying entity and *CDFG* execute after such notification identifies potential impacts of construction and mitigation measures required to minimize and avoid impacts.

Safe Drinking Water Act

The Safe Drinking Water Act (*SDWA*) was established to protect the quality of waters actually or potentially designated for drinking use, whether from aboveground or underground sources. Contaminants of concern in a domestic water supply are those that either pose a health threat or in some way alter the aesthetic acceptability of the water (e.g. - color or odor). Primary and secondary maximum contaminant levels (*MCLs*) are established for numerous constituents of concern including turbidity, total dissolved solids (*TDS*), chloride (*Cl*), fluoride, nitrate, priority pollutant metals and organic compounds, selenium, bromated, trihalomethane and haloacetic acid precursors, radioactive compounds, and gross radioactivity. Water suppliers must follow the requirements established by this Act and its associated amendments.

Comprehensive, current data regarding the occurrence of some of these constituents of concern in the Tulare County areas in which dairy or other bovine facility expansion or new facilities may be permitted is not available. The constituent information which is available has been tabulated (Appendix O) and is mapped on Figures 3.9-5 through 3.9-11 in this Chapter. That mapping demonstrates that dairy/bovine facility-related groundwater contaminants (based on nitrate measurements) has not yet affected municipal or urban groundwater supplies.

AB 3030

Assembly Bill 3030 of 1992 (Water Code Section 1050 et seq.) provides authority for local water agencies to voluntarily prepare groundwater management plans for groundwater basins not subject to existing management. It was California's main program for groundwater planning prior to passage of the Sustainable Groundwater Management Act of 2014. There are at least 19 entities in Tulare County with active groundwater management programs. The largest programs include those administered by Kaweah Delta Water Conservation District, the Kings River Water Conservation District, the Tulare Irrigation District, the Lower Tule Water Users Association, the Alta Irrigation District, and the Kings River Water Conservation District.

Sustainable Groundwater Management Act of 2014

The issue of groundwater overdraft recently took on a new level of importance with the passage of the Sustainable Groundwater Management Act of 2014 (Act). Enacted in October 2014, the Act (Water Code §10720 et seq.) applies to all groundwater basins in the state. Any local agency that has water supply, water management or land use responsibilities within a groundwater basin may elect to be a “groundwater sustainability agency” for that basin. Local agencies have until January 1, 2017 to elect to become or form a groundwater sustainability agency. In the event a basin is not within the management area of a groundwater sustainability agency, the County within which the basin is located will be presumed to be the groundwater sustainability agency for the basin. By enacting the Act, the legislature intended to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater within their jurisdiction.

The Act requires those High and Medium Priority basins identified under the *CASGEM* program that are subject to critical conditions of overdraft to be managed under a groundwater sustainability plan (*GSP*) by January 31, 2020, and requires all other groundwater basins designated as High or Medium Priority basins to be managed under a *GSP* by January 31, 2022. San Joaquin Valley groundwater basin sub-basins located in Tulare County are classified as High Priority and are on *DWR*'s draft list of critically overdrafted basins.

The *GSP* must achieve groundwater basin sustainability within 20 years of plan implementation and maintain sustainable yield for the following 50 years. The Act defines sustainable groundwater management as “the management and use of groundwater in a manner that can be maintained without causing undesirable results”. “Undesirable results” include chronic lowering of groundwater levels and significant and unreasonable reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence, or effects on beneficial uses of interconnected surface water.

The County will take an active role in implementing the Act over the next several years and will appropriately address concerns regarding *ACFP* permit applications that may raise concerns about its proposed water use under the to-be-developed *GSPs*. The Act is not yet a direct regulatory measure, but will become such a measure after *GSPs* are prepared.

Water Conservation and Drought Response

The Water Conservation Act of 2009 (*SB X7-7*, Water Code §10608 et sq.), was enacted as part of a five-bill package aimed at improving the reliability of California’s water supply and restoring the ecological health of the Delta. *SB X7-7* has multiple urban and agricultural water use efficiency provisions. The key urban conservation measure established a statewide goal of reducing urban per-capita water use by 20 percent by 2020. Under *SB X7-7*, each urban water supplier is required to set water use targets based on its historical water use, the local climate, and locally implemented conservation programs.

SB X7-7 also requires agricultural water suppliers providing water to at least 10,000 irrigated acres must adopt a water management plan with specified components, and implement cost-effective efficient water management practices. However, any agricultural water supplier providing water to less than 25,000 irrigated acres is exempt unless funding has been provided to implement the law's requirements. These requirements were adjusted by a drought-response Executive Order in 2015.

Executive Order B-29-15, being implemented by regulations and water rights usage allocations and restrictions by the State Water Resources Control Board, is a drought-related measures with broad water usage authority. The Order is reproduced in Appendix F of this *EIR*.

In 2015, the *SWRCB* readopted prior and adopted new emergency water conservation regulations (23 Cal. Code Regs. § 863 et seq.): These emergency regulations sunset in 2016 unless they are re-adopted. The emergency regulations mandated a 25 percent statewide reduction in potable urban water use between June 2015 and February 2016, implemented through different water conservation standards applied to water suppliers based on their prior per capita water usage; water suppliers with higher per capita water usage were required to achieve greater percentage reductions. Executive Order 8-36-15 extends these restrictions until October 31, 2016, if drought conditions persist through January 2016. It also orders the *SWRCB* to consider modifying the restrictions to address non-potable as well as potable water uses.

California Safe Drinking Water Act

The California *SDWA* (Health and Safety Code Section 116270 et seq.) regulates drinking water more rigorously than the federal law. Like the federal *SDWA*, California requires that primary and secondary maximum contaminant levels (*MCLs*) be established for pollutants in drinking water; however, some California *MCLs* are more protective of health. The Act also requires the *SWRCB* (formerly the Department of Health Services) to issue domestic water supply permits to public water systems.

Local Regulations

County of Tulare Environmental Health Regulations

The County of Tulare Health and Human Services Agency (*HHS*), Environmental Health Division, has been granted primacy by the *DHS*, and is responsible for the administration and enforcement of the Safe Drinking Water Act involving those systems in Tulare County with less than 200 connections. County Environmental Health staff are also responsible for regulation of, development review, approval and enforcement related to private wells and wells located on bovine facilities sites, for properties not served by water or wastewater districts or other public entities.

Tulare County Flood Damage Prevention Code

The County's flood damage prevention code is intended to promote public health, safety, and general welfare in addition to minimizing public and private losses due to flood conditions. The County code provisions to protect against flooding include requiring uses vulnerable to floods be

protected against flood damage at the time of initial construction; controlling the alteration of natural flood plains; and preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards in other areas. The County flood damage prevention code, amended by Ord. No. 3212 effective October 29, 1998, is modeled upon *FEMA* guidance.

ACFP

The existing *ACFP* adopted in 2000 (see Appendix K) is part of the Environmental Resources Management Element of the Tulare County General Plan. The *ACFP* includes locational/animal density and compliance/monitoring policies, as well as standard conditions of approval intended to reduce water quality impacts to some extent by locating dairies away from inhabited areas, regulating the allowed number of animals, restricting the disposal of nutrient wastes to manageable amounts, monitoring the effectiveness of *ACFP* policies, and making future changes as needed.

The existing *ACFP* requirements that protect groundwater quality include submission by each dairy to the County of an annual compliance report, geology/hydrology report, groundwater monitoring plan, and comprehensive nutrient management plan.

Since adoption of the existing *ACFP* in 2000, overlapping *RWCQB* regulations have addressed many of these requirements. Consequently, amendments to the *ACFP* that are included in the proposed Program are designed to streamline local permitting by avoiding duplicative County regulation of water quality impacts.

ENVIRONMENTAL SETTING

An Overview

Precipitation provides California with nearly 200 million acre-feet (*maf*) of surface water supply on an average basis. Of this renewable supply, about 65 percent is cycled by trees and other plants through evaporation and transpiration. The remaining 35 percent of precipitation remains in the state's hydrologic system as runoff. Over 30 percent of the State's runoff is not explicitly designated for urban, agricultural, or environmental uses. This water flows through the hydrologic system to the Pacific Ocean or to salt sinks. The remaining runoff (2-3 percent) is available as a renewable water supply for urban, agricultural, and environmental uses.⁸

Geographic Description of Watersheds, Rivers and Streams

The *DWR* subdivides the State into regions for planning purposes. The largest planning unit is the hydrologic region, corresponding to the State's major drainage basins. Tulare County is primarily located within *DWR*'s Tulare Lake Hydrologic Region (Tulare *HR*), located south of the San Joaquin River watershed. The Tulare Lake Basin is a closed drainage basin at the south end of the San Joaquin Valley, encompassing stream channels draining to Kern, Tulare, and Buena Vista Lakes.

Local Surface Water^{9, 10}

Local streams in Tulare County flow from the Sierra Nevada Mountains westwards towards the San Joaquin Valley. The Tulare County General Plan defines four rivers and their watersheds in the County: Kings River Watershed, Kaweah Watershed, Tule River Watershed, and Deer Creek/White River Watershed (see Figure 3.9-1, Main Watersheds of Tulare County). The Kings River Watershed encompasses 1,742 square miles, ranging in elevation from 500 to 14,000 feet above sea level. Demand is primarily agricultural. A major local water supply comes from the Kings River through operation of Courtright Reservoir (123,200 acre-feet), Wishon Reservoir (128,300 acre-feet), and Pine Flat Reservoir.

The Kaweah Watershed is south of the Kings River Watershed. The Kaweah River drains 561 square miles of the Sierra Nevada Mountains, and is actually a tributary to the Tule River. A primary source of local water supply is the Kaweah River, and operations of Terminus Reservoir/Lake Kaweah. Lake Kaweah was recently enlarged to 183,800 acre-feet capacity to increase flood protection for downstream communities.

Farther south, the Tule River Watershed is primarily supplied by the Tule River, which drains 390 square miles above Lake Success (capacity 82,300 acre-feet). The Deer Creek/White River Watershed is in the southern portion of the County. Surface supplies emanate from a low-elevation stream group. This area, however, has the highest dependence on imported *CVP* water of any region in Tulare County.

Water districts and private water companies in the County have developed facilities consisting generally of unlined canals and gravity or low pressure pipelines to take advantage of these locally derived surface water resources.

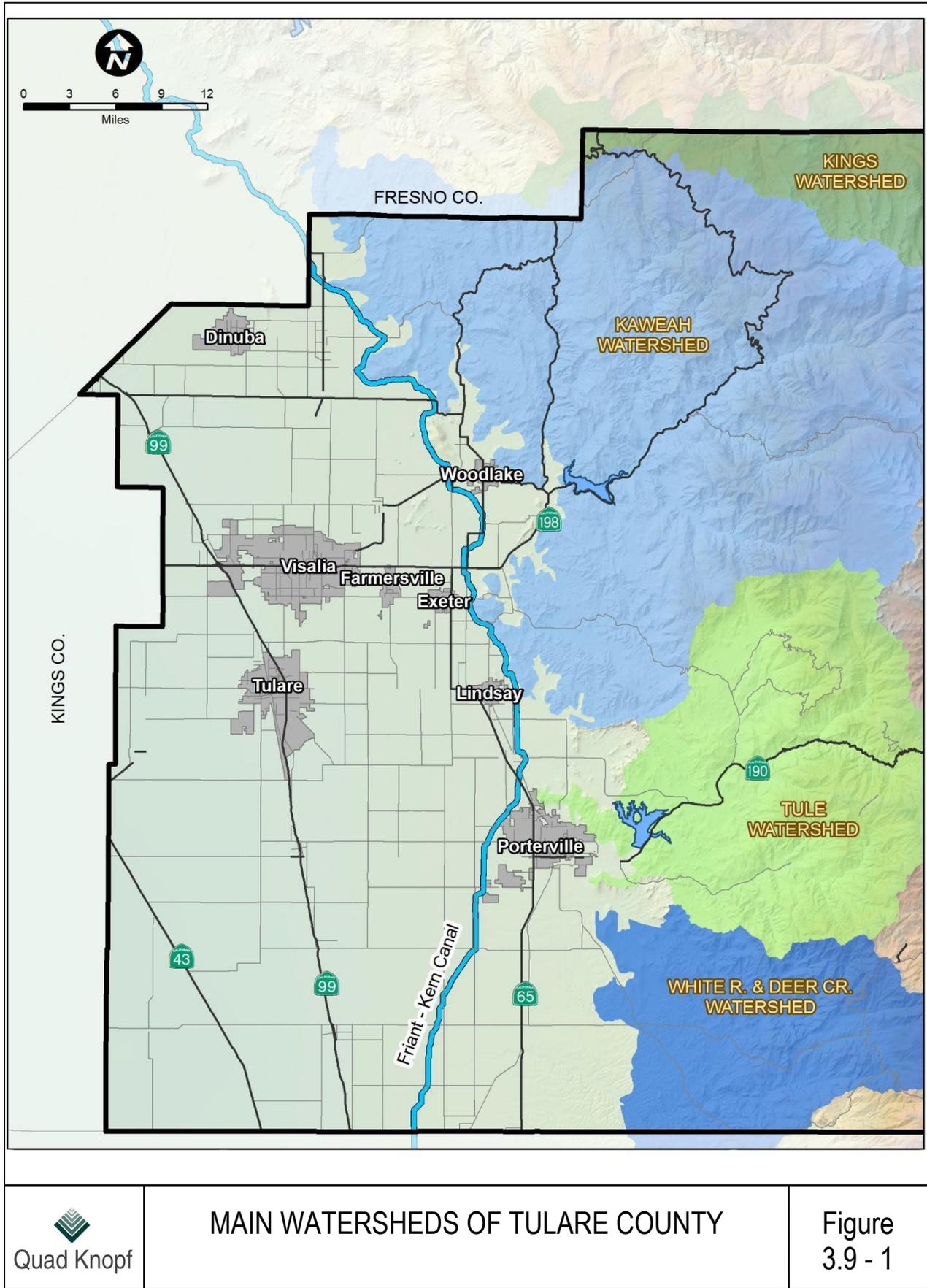
Surface water bodies on the Valley floor that could be affected by the proposed Program include Cross Creek, the St. John's River, the Tule River, Deer Creek, Elk Bayou, and Bates Slough. The streams and creeks in the County are ephemeral, have been channelized, or diverted into percolation ponds, irrigation canals, and ditches. The water quality of these streams and distributaries of reference of their mountain area runoff is generally excellent, meeting Central Valley Regional Water Quality Control Board Basin Plan beneficial use standards and water quality objectives.¹¹

Imported Surface Water

Imported surface water supplies for the Tulare Lake Basin include the Central Valley Project (*CVP*), the State Water Project (*SWP*), the Cross Valley Canal (*CVC*) distribution system.

Groundwater

Historically groundwater resources in Tulare County have been extracted to satisfy about one third of existing urban and agricultural demands, but are limited by groundwater basin yield in some locations and water quality issues in others. Groundwater planning efforts in the County are addressing some identified issues such as groundwater overdraft and groundwater quality.



Geographic and Hydrogeologic Characteristics

As noted previously, Tulare County is primarily located within *DWR's* Tulare Lake Hydrologic Region (Tulare *HR*). It has unconfined groundwater throughout the entire County, and confined groundwater in its western portion underlying the Kings, Kaweah, and Tule Sub-basins. Areas near the Kings, Kaweah, and Tule Rivers contain highly permeable soils with opportunities for natural and artificial recharge, while the areas between the alluvial fans have less permeable soils. Alluvial deposits containing fresh water commonly exceed 1,000 feet in depth. An important structure is the Corcoran Clay layer, which can be found in the Kaweah and Tule Sub-basins. Where present, this layer restricts water movement, dividing groundwater into a confined layer below the Corcoran Clay and an unconfined layer above it.

Tulare County is primarily underlain by three groundwater sub-basins within the San Joaquin Valley basin (*DWR*, 2009), Kings, Kaweah and Tule, as defined by *DWR*. Figure 3.9-2, shows Groundwater Sub-Basins of Tulare County.

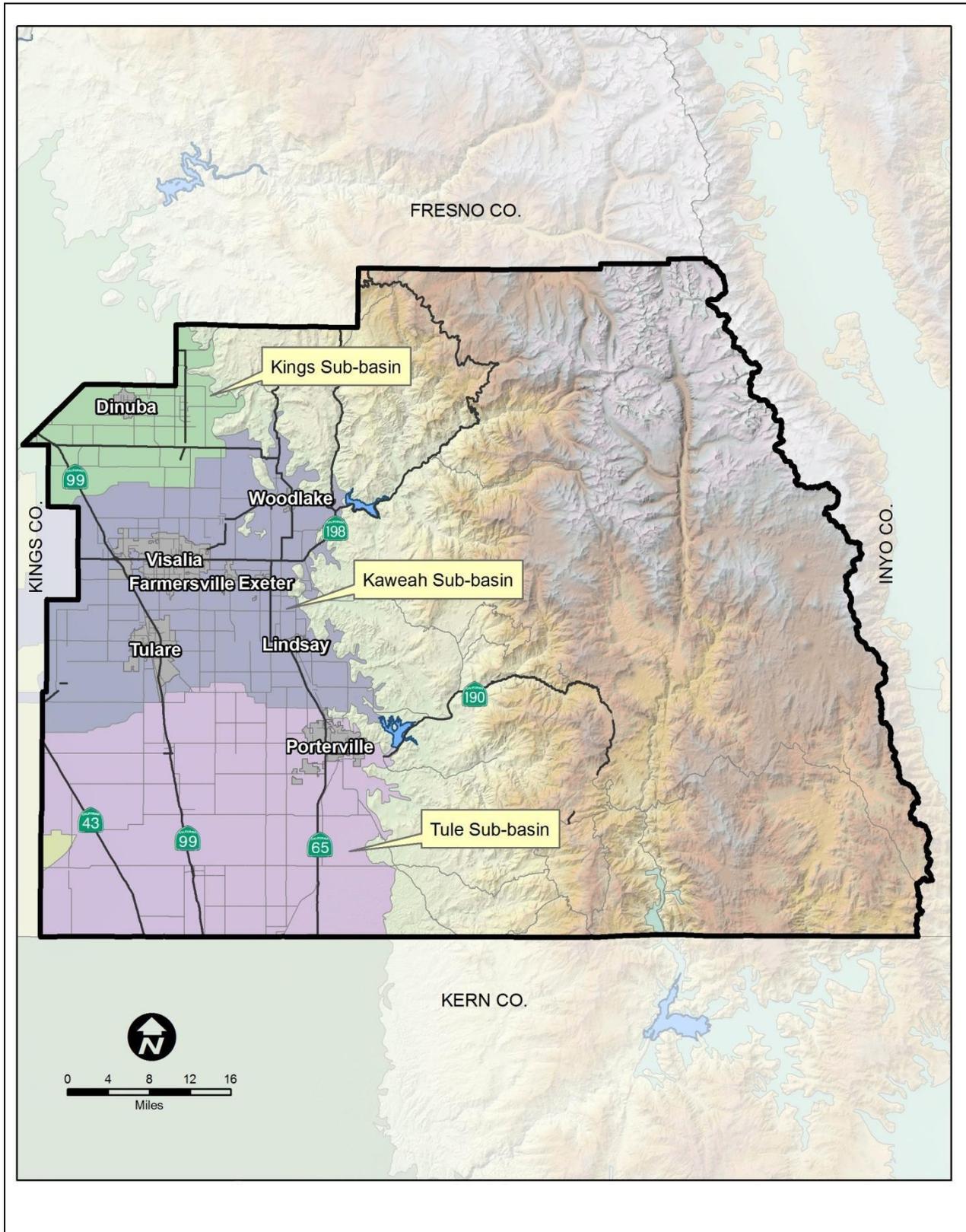
Groundwater Use and Overdraft in Tulare County

Groundwater has historically accounted for as much as 50% of total water supply in Tulare *HR*, among the highest percentages in the state. In addition, the sum total use of groundwater in Tulare *HR* is higher than the total groundwater use in any other *HR*. The Kings, Tule, and Kaweah Basins are identified by *DWR* as in a 'critical condition of overdraft'.

Groundwater pumping increases in Tulare County when surface supplies available to the County are reduced. Surface water supplies have been reduced in recent years due to drought, environmental restrictions, and other factors, discussed below.

Estimates of groundwater overdraft vary for the Tulare *HR*. Total overdraft has been estimated at 820,000 af/yr,¹² while historical overdraft has been estimated at 308,000 af/yr for the period 1921-1993². *DWR* estimated changes in groundwater storage for the Tulare *HR* over a range of recent water year types as +263,000 acre-feet in 1998, -1,625,00 acre-feet in 2000, and - 4,115,000 acre-feet in 2001.¹³ Recent groundwater conditions within Tulare County are described in Appendix G, Programmatic Water Supply Evaluation Technical Memorandum; as described in the appendix, significant reduction in groundwater elevations has occurred in many portions of the County between spring 2009 and spring 2014.

Groundwater recharge occurs both naturally and artificially. Natural recharge consists of percolation from lakes, drainage channels, and rainfall. Artificial recharge occurs through seepage from conveyance facilities and percolation from irrigation, as well as deliveries of surface water to recharge basins, open land, unlined canals, and fields in the off-season.



GROUNDWATER SUB-BASINS OF
TULARE COUNTY

Figure
3.9 - 2

Groundwater Quality Overview

In most areas of Tulare County, groundwater quality is acceptable for agricultural and urban uses through normal treatment and delivery options. Where local impairments exist, the primary constituents of concern are high total dissolved solids (*TDS*), nitrate, arsenic, and organic compounds such as herbicides, pesticides and fertilizers, as well as instances of radiological parameters such as uranium and radium 228.

The salinity of groundwater typically increases in a westward direction across the San Joaquin Valley. Conversely, nitrates and radiological components present near the Sierra foothills region decrease with distance from the foothills.

The Kings Sub-basin's groundwater near the Sierra foothills may be high in nitrates and sometimes radiological contaminants, and there are localized instances of pesticide impairment.¹⁴ Farther from the foothills, naturally occurring contaminants are diluted by surface water recharge, and replaced with organic contaminants. All communities in the Kings Sub-basin are influenced by water quality issues to some extent.¹⁵

The Kaweah Sub-basin has high nitrate areas on its eastern side where *TDS* values typically range from 300-600 *mg/L*.

The Tule Sub-basin has some of the most significant issues in the County, with chlorides, nitrates, and *DBCP* extending several miles from the Sierra foothills including beneath the City of Lindsay. Water quality in this area is variable. Communities along the Highway 99 axis have access to good quality deep and shallow sources, while water quality in some other areas is unacceptable due to arsenic and other naturally occurring contaminants. Arsenic is a locally specific problem. For example, several communities, such as Alpaugh, had wells brought into noncompliance when Maximum Contaminant Levels for arsenic were reduced from 50 *ppb* to 10 *ppb* several years ago.

Flooding

The east side of Tulare County is drained primarily by the Kings, Kaweah, and Tule Rivers. These three rivers, all in the Tule Lake Hydrological Region, historically flowed directly into now dry Tulare Lake. Small streams, which are usually dry except during winter and spring runoff, drain the foothills of Tulare County.

Flooding is a natural occurrence in the Central Valley because it is a natural drainage basin for thousands of watershed acres of Sierra Nevada and Coast Range foothills and mountains. Two kinds of flooding can occur in the Central Valley: general rainfall floods occurring in the late fall and winter in the foothills and on the valley floor; and snowmelt runoff floods occurring in the late spring. Most floods are produced by extended periods of precipitation during the winter months. Floods can also occur when large amounts of water (due to snowmelt) enter storage reservoirs, causing an increase in the amount of water that is released.

Structural works, including dams, detention basins and channel improvements, have been constructed to reduce flood damage. Several large reservoirs were constructed specifically to provide flood protection for urban and agricultural areas, as indicated in Table 3.9-1. The County

is replete with smaller detention basins, not listed in Table 3.9-1, and bypass channels to reroute flood flows to undeveloped areas.

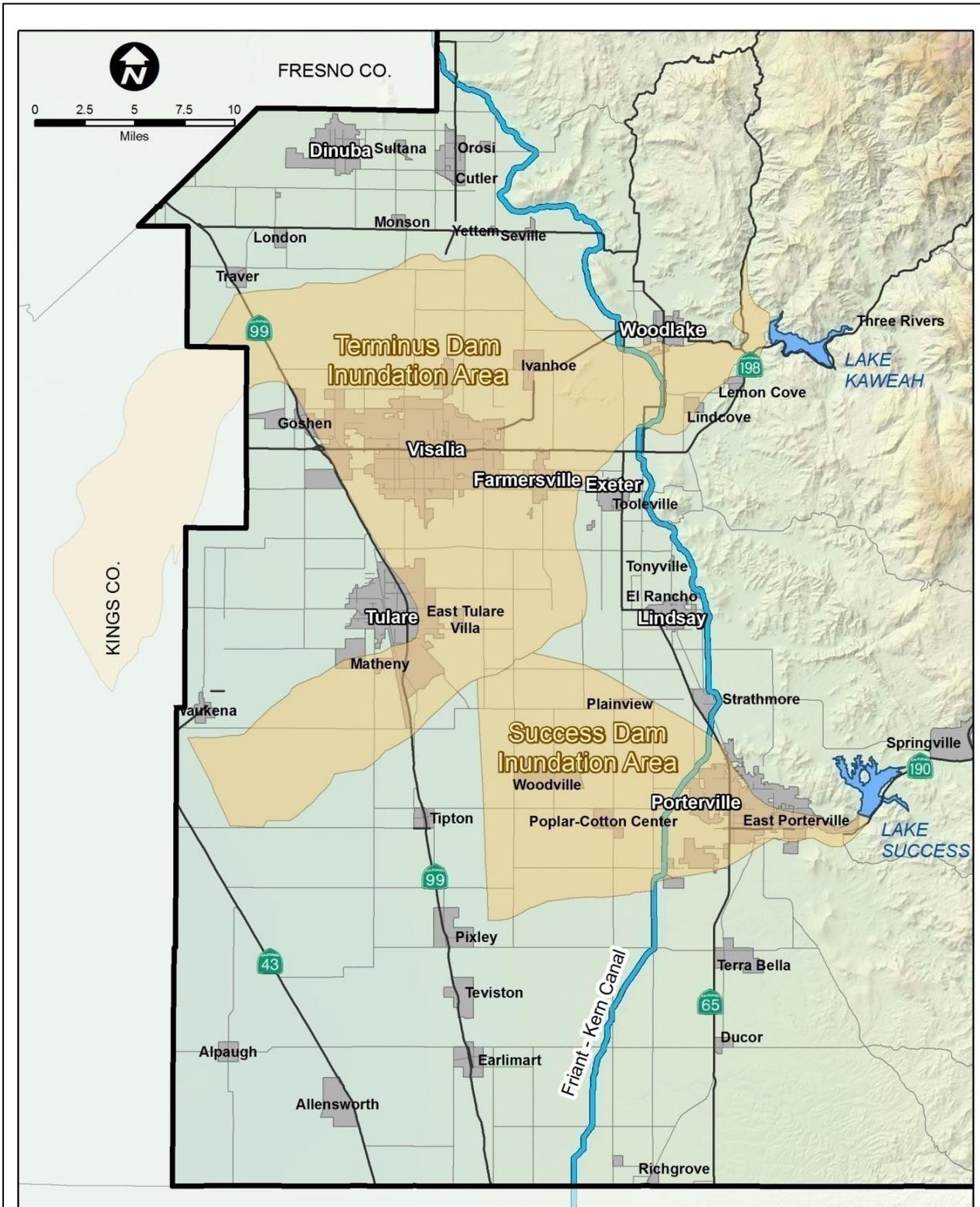
**Table 3.9-1
Flood Control Reservoirs in Tulare County¹⁶**

Reservoir	Stream	Owner	Flood Control Capacity (acre-feet)	Protects	Level of Protection
Pine Flat Lake	Kings River	U.S. Army Corps of Engineers	136,000 <i>af</i> (1,000,000 <i>af</i> total reservoir)	340,000 acres agric in Tulare Lake & along Kings River	1:100 rain; 1:50 snow along Kings River; 1:10 in Tulare Lake
Lake Kaweah/Terminus Reservoir	Kaweah River	U.S. Army Corps of Engineers	185,000 (185,000 <i>af</i> total reservoir)	386,000 acres agric along Kaweah River and in Tulare Lake; Visalia	1:50 along Kaweah River; 1:10 in Tulare Lake
Lake Success	Tule River	U.S. Army Corps of Engineers	48,000 (82,300 <i>af</i> total reservoir)	320,000 acres along Tule River and in Tulare Lake; Porterville	1:50 along Tule River; 1:10 in Tulare Lake
Sand Creek Detention	Sand Creek	Tulare County	10,000	9,200 acres of agric & municipal	1:50 in Sand Creek watershed

Much of Tulare County is within a 100-year floodplain. The 100-year flood is defined as the flood event that has a one percent chance of occurring in any given year. It is important to note that the delineation of areas within the 100-year floodplain represents a statistical probability for the long-term average occurrence of flooding. Actually, flooding can occur in a 100-year floodplain more or less frequently than once in a hundred years.

Dam Failure Inundation

Two major dams could cause substantial flooding in Tulare County in the event of a failure: Terminus Dam on Lake Kaweah and Success Dam on Lake Success; the Pine Flat and Sand Creek facilities have a more limited potential. In addition, there are many smaller dams throughout the County that would cause localized flooding in the event of their failing. However, a comprehensive analysis of the potential for dam failure and possible downstream effects for these upstream dams has been undertaken by the U.S. Army Corps of Engineers, resulting in the recent construction of fuse gates at Terminus Dam. (Figure 3.9-3, Inundation from Dam Failure in Tulare County, shows areas of the County that could be subject to floodwater inundation in the unlikely event of dam failure.)



INUNDATION AREAS FROM DAM FAILURE IN TULARE COUNTY

Figure 3.9 - 3

Water Supply

In preparation for this environmental analysis, and supplementing the data and analysis in Tulare County's General Plan *EIR*, the County has prepared a Programmatic Water Supply Evaluation Technical Memorandum. This document is appended to this *EIR* (Appendix G).

As described in Appendix G, in 2010, the County's water supplies to meet agricultural, urban and managed wetland demands were derived from local and imported surface sources and local groundwater, with surface and groundwater sources each providing about 50 percent of the total 2010 supply.¹⁷ Table 3.9-2 provides *DWR*'s representation of these three sources by *DAU* (Department of Water Resources Detailed Analysis Unit).

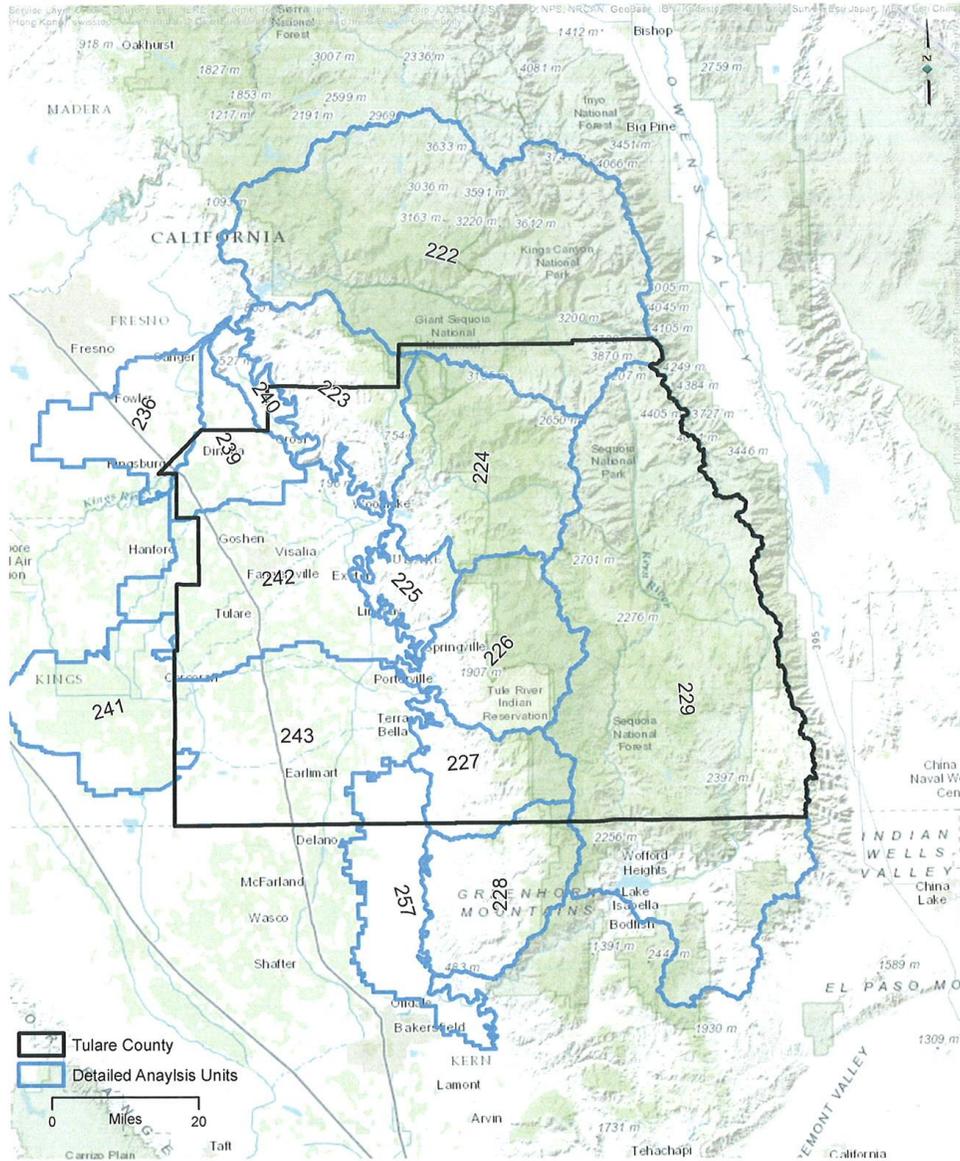
Long-term Average Supply Characteristics

To understand longer term variances in water supply conditions, the *DWR* data provided in water budgets for 2002 through 2010 were summarized. The values are presented in Tables 3.9-2, 3.9-3 and 3.9-4. Detailed Analysis Units (*DAU*'s) in Tulare County are mapped on Figure 3.9-4. As expected, total groundwater extracted in a given year varies in relation to the availability of surface supplies, especially local supplies. For instance, in 2005, significant local and *CVP* surface sources were used to meet applied water demands, limiting groundwater extraction. In contrast, in 2007 and 2008, much less surface water was available and groundwater extractions were significantly higher.¹⁸ On average, the County averages over 2,800,000 acre-feet of water demand annually (see Table 3-9.5 as an example).

As this Draft *EIR* is being prepared, the State, the San Joaquin Valley, and Tulare County are enduring a fourth year of less-than-average precipitation with reduced water surface supplies and increased groundwater pumping. Such drought years, of lesser severity, have occurred since water supply data has been accurately recorded, and according to tree-ring and water-body soils analyses, for longer time periods. Nevertheless, the analyses in Appendix G and the excerpted Tables from *DWR* (Tables 3.9-2, 3.9-3, and 3.9-4) are reasonably representative of existing baseline conditions for a fluctuating water supply resource.

DWR's water budgets for the consecutive years 2002 through 2010 are closely matched by the 2010 value. Thus, 2010 is used by this *EIR* as an "average", baseline, condition within the County. Based upon water demand data developed by *DWR* for the 2013 California Water Plan Update ("2013 Water Plan"), existing water demand in the County is assumed to be similar to the annual demand for 2010 represented in water budgets developed by *DWR* for the aforementioned *DAUs*.

Notably, 97 percent of total demand was in the three *DAUs* with the majority of the high quality agricultural land – Alta, Kaweah Delta, and Tule Delta. Also, 97 percent of urban demand is within the same three *DAUs*, as the largest communities in the County are located in and around the prime agricultural land. Not only are the demands in these three *DAUs* important for the existing demand calculation but these same *DAUs* are important for the future condition demand analysis because these represent the areas that will experience the largest projected growth in bovine populations.



DWR DETAILED ANALYSIS UNIT LOCATIONS IN TULARE COUNTY

Figure 3.9 - 4

Table 3.9-2
Existing Demand Conditions by Detailed Analysis Unit
 (Source: California Department of Water Resources – draft water budget data for 2010)

DAU Name: (all values in 1,000 af)	Tulare Lake Tulare Co	Consolidate d Tulare Co	Alta Tulare Co	Orange Cove Tulare Co	Kaweah Delta Tulare Co	Tule Delta Tulare Co	Kings River Tulare Co	Kings-Kaweah Interstream Tulare Co	Kaweah River Tulare Co	Kaweah-Tule Interstream Tulare Co	Tule River Tulare Co	Deer Creek Tulare	Poso Creek Tulare Co	Upper Kern River Tulare Co	North-eastern Kern Tulare Co	Tulare County Total
<i>DAU #</i>	<i>DAU 24154</i>	<i>DAU 23654</i>	<i>DAU 23954</i>	<i>DAU 24054</i>	<i>DAU 24254</i>	<i>DAU 24354</i>	<i>DAU 22254</i>	<i>DAU 22354</i>	<i>DAU 22454</i>	<i>DAU 22554</i>	<i>DAU 22654</i>	<i>DAU 22754</i>	<i>DAU 22854</i>	<i>DAU 22954</i>	<i>DAU 25754</i>	
Agriculture																
Applied Water Use	0.6	9.7	253.6	32.4	1,011.7	1,261.8	0.0	3.1	0.0	1.3	2.9	0.8	0.0	0.0	36.3	2,614.2
Conveyance Applied Water Use	0.0	0.7	11.5	0.7	61.8	49.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	127.9
Urban																
Applied Water Use	0.0	0.3	13.4	0.7	80.3	30.6	0.0	0.1	0.9	0.2	1.7	0.1	0.0	0.0	0.1	128.4
Conveyance Applied Water Use	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Managed Wetlands																
Applied Water Use	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3
Conveyance Applied Water Use	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Use Totals																
Applied Water Use	0.6	10.7	278.5	33.8	1,153.8	1,345.2	0.0	3.2	0.9	1.5	4.6	0.9	0.0	0.0	40.1	2,873.8

Table 3.9-3
Existing Water Supply Sources by Detailed Analysis Unit
 (Source: California Department of Water Resources – draft water budget data for 2010)

DAU Name: (all values in 1,000 af)	Tulare Lake Tulare Co	Consolidated Tulare Co	Alta Tulare Co	Orange Cove Tulare Co	Kaweah Delta Tulare Co	Tule Delta Tulare Co	Kings River Tulare Co	Kings-Kaweah Interstream Tulare Co	Kaweah River Tulare Co	Kaweah-Tule Interstream Tulare Co	Tule River Tulare Co	Deer Creek Tulare	Poso Creek Tulare Co	Upper Kern River Tulare Co	North-eastern Kern Tulare Co	Tulare County Total
<i>DAU #</i>	<i>DAU 24154</i>	<i>DAU 23654</i>	<i>DAU 23954</i>	<i>DAU 24054</i>	<i>DAU 24254</i>	<i>DAU 24354</i>	<i>DAU 22254</i>	<i>DAU 22354</i>	<i>DAU 22454</i>	<i>DAU 22554</i>	<i>DAU 22654</i>	<i>DAU 22754</i>	<i>DAU 22854</i>	<i>DAU 22954</i>	<i>DAU 25754</i>	
Local Supplies	0.2	8.0	123.4	0.0	45 5.5	60.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	648.1
CVP Project Deliveries	0.0	0.0	0.0	7.1	214.3	471.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.1	732.1
Groundwater Extraction	0.4	2.7	153.7	26.7	266.3	810.2	0.0	3.2	0.9	1.5	4.6	0.9	0.0	0.0	0.6	1,471.7
Total	0.6	10.7	277.1	33.8	1,136.1	1,342.4	0.0	3.2	0.9	1.5	4.6	0.9	0.0	0.0	40.1	2,851.9

Table 3.9-4
Average County Water Supply Conditions
 (Source: California Department of Water Resources – draft water budget data for 2002-2010)

Category	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Groundwater (1,000 acre-feet)										
Total Groundwater Extracted	1,959.5	1,633.2	2,104.7	946.7	1,036.8	2,267.2	2,315.7	2,291.3	1,471.7	1,780.8
Deep Percolation of Applied Water	808.9	765.1	845.1	710.1	700.1	816.7	903.9	924.8	802.0	808.5
Conveyance Deep Percolation	42.7	53.3	41.4	79.5	72.0	26.1	39.5	43.2	68.8	51.8
Net Groundwater Use	1,107.9	814.8	1,218.2	155.5	263.5	1,424.4	4,372.3	1,323.3	600.9	920.1
Surface Water (1,000 acre-feet)										
Local streams/rivers	369.2	496.8	385.4	762.6	746.8	206.4	399.5	379.4	648.1	488.2
Central Valley Project	516.1	560.1	433.9	828.3	695.9	321.1	394.7	488.3	732.1	552.3
Total Supply	2,844.8	2,690.1	2,924.0	2,537.6	2,479.5	2,794.7	3,109.9	3,159.0	2,851.9	2,821.3

**Table 3.9-5
Average County Water Demand Conditions**

(Source: California Department of Water Resources – draft water budget data for 2002-2010)

Category (values in 1,000 acre-feet)	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Agricultural	2,721.1	2,551.2	2,780.8	2,416.1	2,352.1	2,662.0	2,980.7	3,029.7	2,742.1	2,692.9
Urban	132.6	147.9	152.3	128.9	134.6	141.0	137.3	137.4	128.4	137.8
Managed Wetlands	3.3	3.1	3.1	2.8	3.3	3.3	3.3	3.3	3.3	3.2
Total Demand	2,857.0	2,702.2	2,936.2	2,547.8	2,490.0	2,806.3	3,121.3	3,170.4	2,873.8	2,833.9

Groundwater Quality Detailed Setting

The County has, utilizing data from the *RWQCB*, the California Department of Public Health, U.S. Geological Service, *DWR*, and Tulare County collated, tabulated and mapped well and water system contaminant data from 2000 to 2011 for the entire County.^{19, 20, 21} That data is tabulated in Appendix O, and mapped on Figures 3.9-5 through 3.9-11 on the following pages.

Conclusions which can be drawn by review of this data tabulation and mapping regarding the quality of the County’s groundwater resource include:

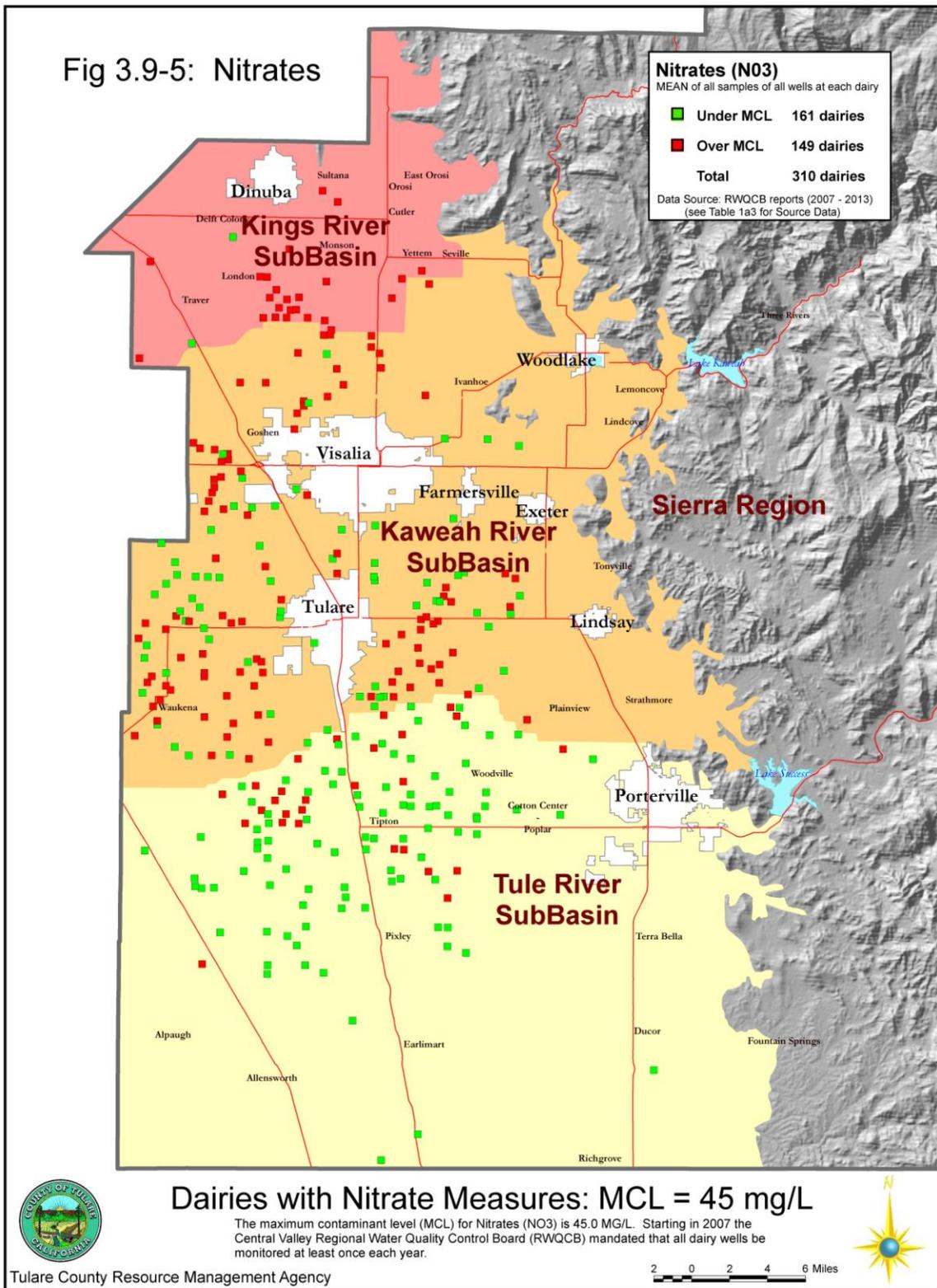
1. Groundwater nitrates, salts, and elevated coliform can be identified as associated with dairies. Of the three contaminants, nitrates are the most prevalent and present at higher levels in Tulare County with respect to State drinking water compliance, although all three contaminants are present at elevations indicative of dairy operations groundwater contamination;
2. Lower levels of nitrate or salts contamination are associated with areas which have been intensively farmed or dairy-located for lesser periods of time;
3. There is no evident current correlation between dairy locations and nitrates contamination of public water systems (any mapped contamination is of public water systems far removed from existing dairies).

Nitrates

The tabulated and mapped data confirms the generally accepted principal concern regarding the nitrate contamination of the County’s groundwater. (Surface water serving the County’s agriculture is of good quality except for introduction of salts from Delta sources) It is evident that dairies are contributing nitrates to groundwater, although effects on the resource may be delayed for years as deep percolation reaches the aquifer.

In 2008, Senate Bill *SB X2 1* (Perata) was signed into law (Water Code Section 83002.5), requiring the *SWRCB*, in consultation with other agencies, to prepare a report to the Legislature to “improve understanding of the causes of [nitrate] groundwater contamination, identify potential remediation solutions and funding sources to recover costs expended by the State...to clean up or treat groundwater, and ensure the provision of safe drinking water to all communities.” Two landmark reports were prepared as a result of this process:

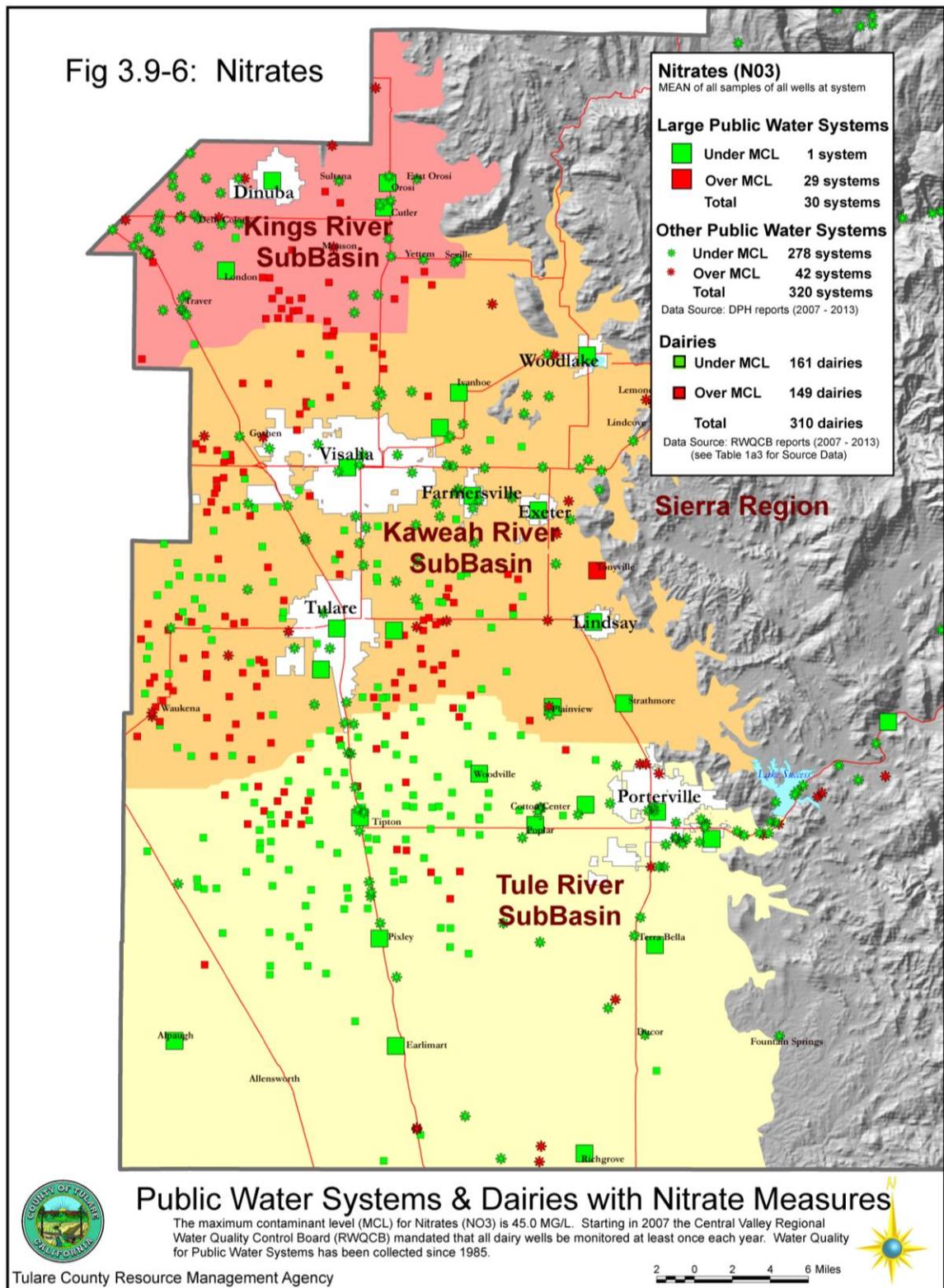
Fig 3.9-5: Nitrates



WELL NITRATE MEASUREMENTS vs.
 MCL = 45 mg/L

Figure
 3.9 - 5

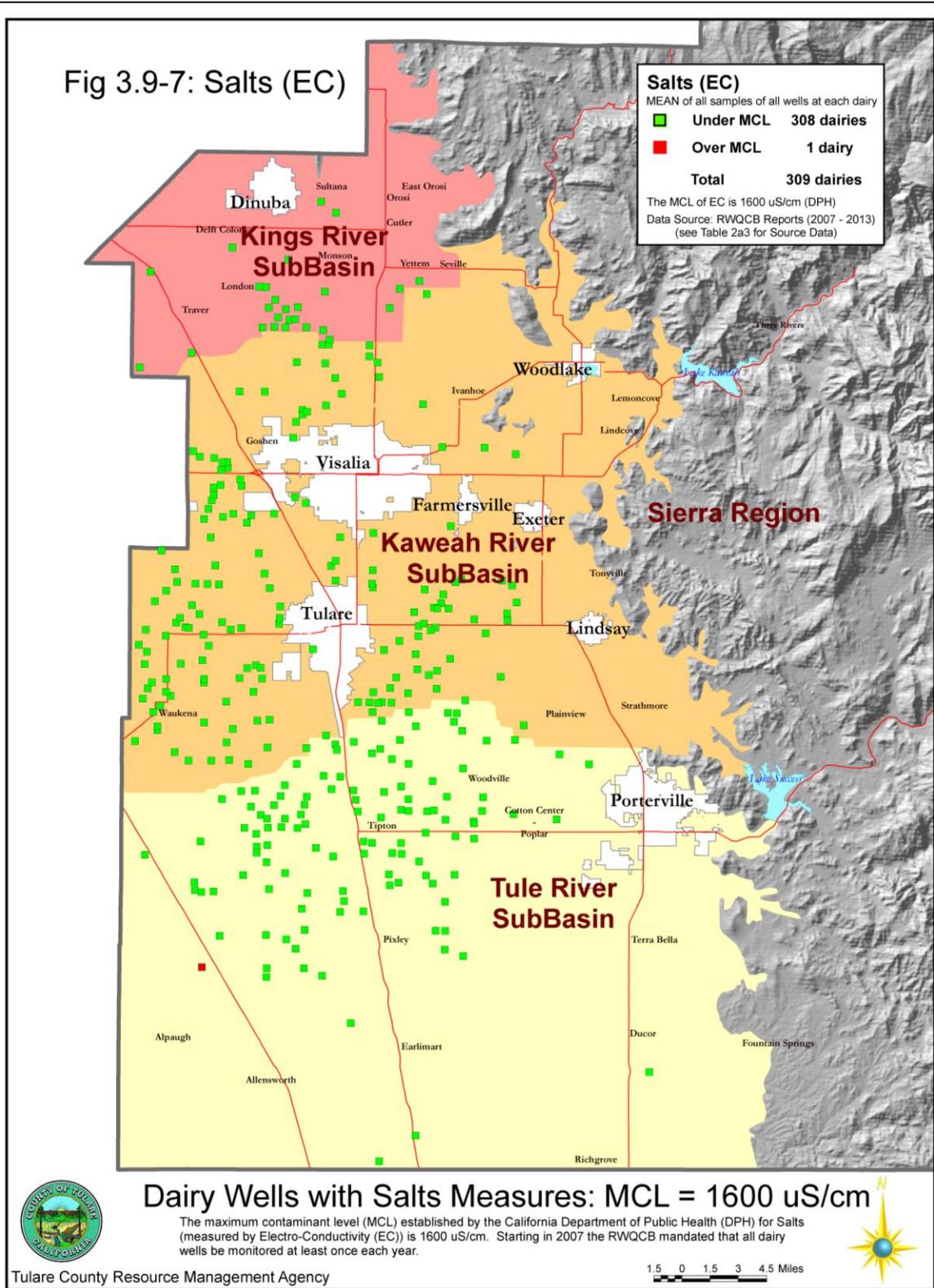
Fig 3.9-6: Nitrates



DAIRY WELL NITRATE MEASUREMENTS vs.
MCL = 45 mg/L

Figure
3.9 - 6

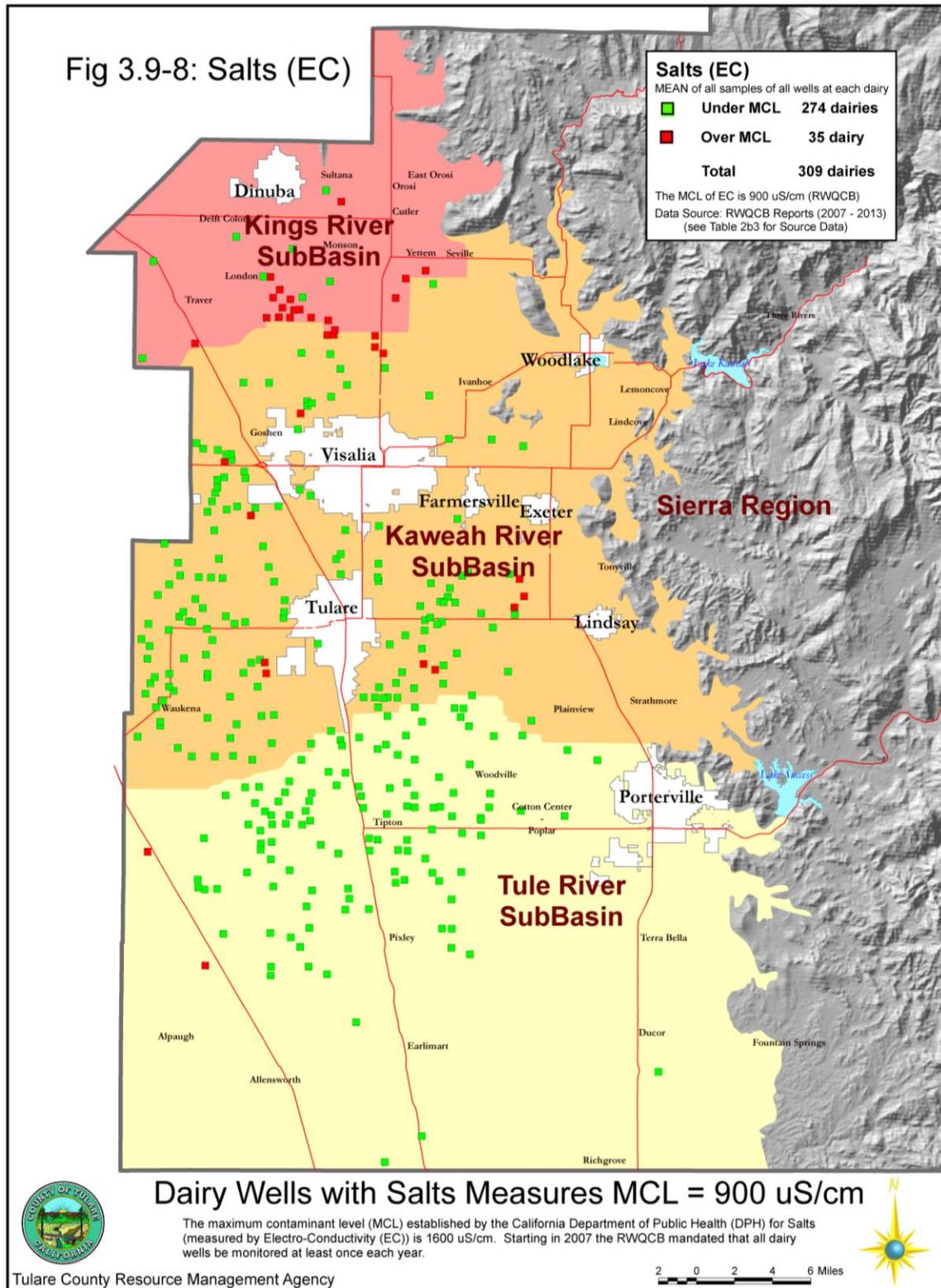
Fig 3.9-7: Salts (EC)



**PUBLIC WATER SYSTEM WELL
NITRATE MEASUREMENTS**

**Figure
3.9 - 7**

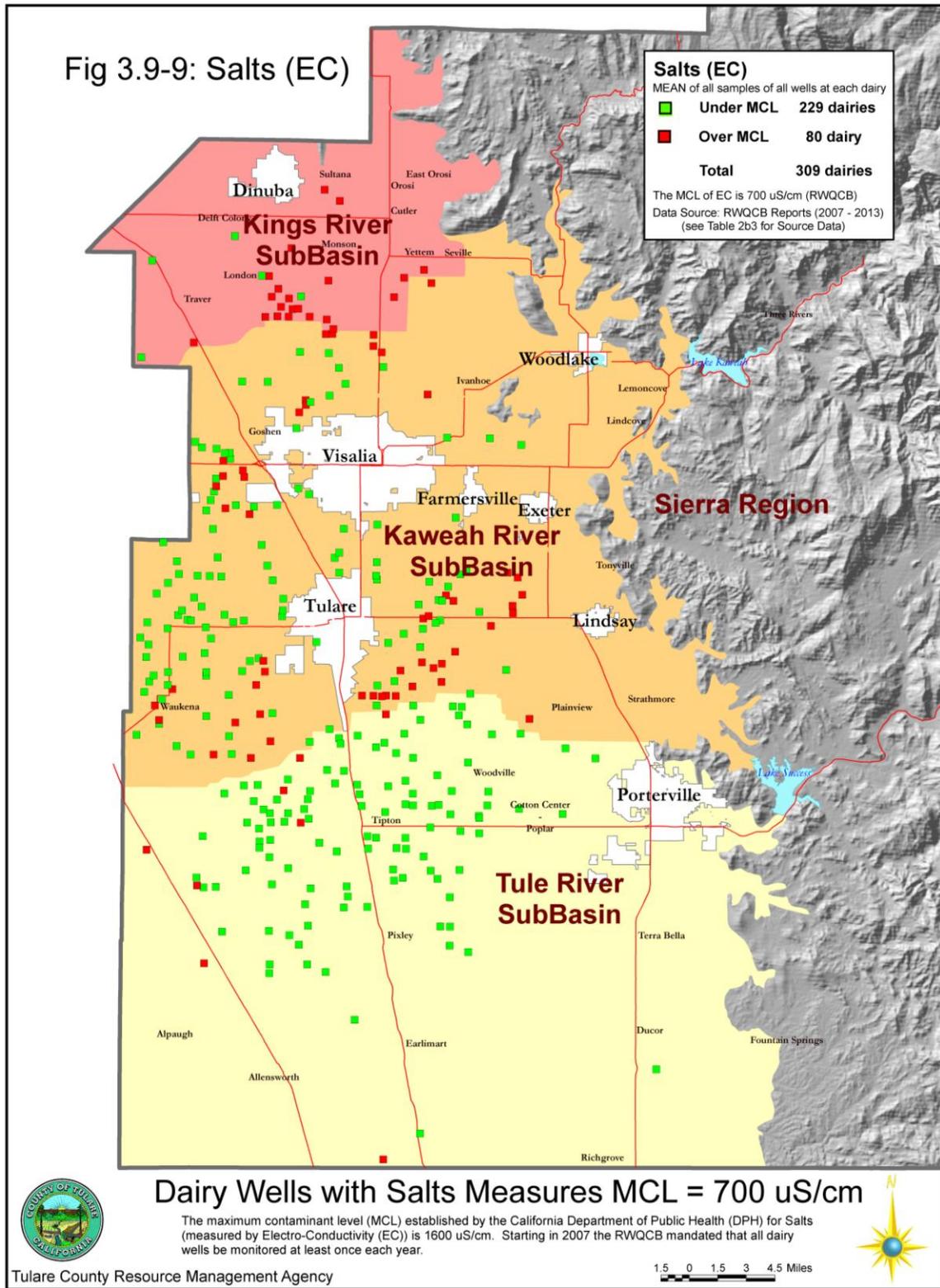
Fig 3.9-8: Salts (EC)



DAIRY WELL SALTS MEASUREMENTS vs.
 MCL = 1600 uS/cm (MEAN)

Figure
 3.9 - 8

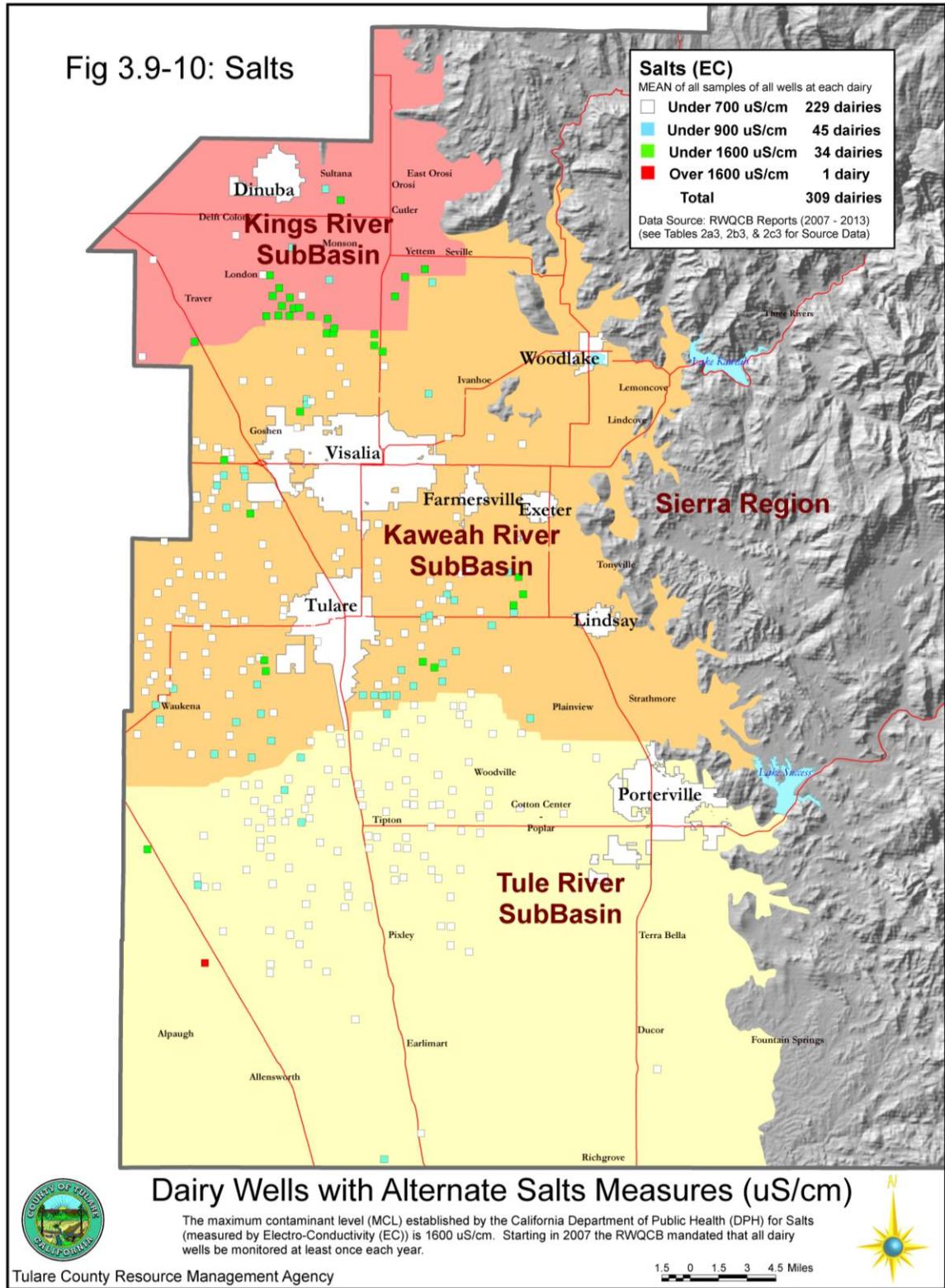
Fig 3.9-9: Salts (EC)



DAIRY WELL SALTS MEASUREMENTS vs.
 MCL = 900 uS/cm (MEAN)

Figure
 3.9 - 9

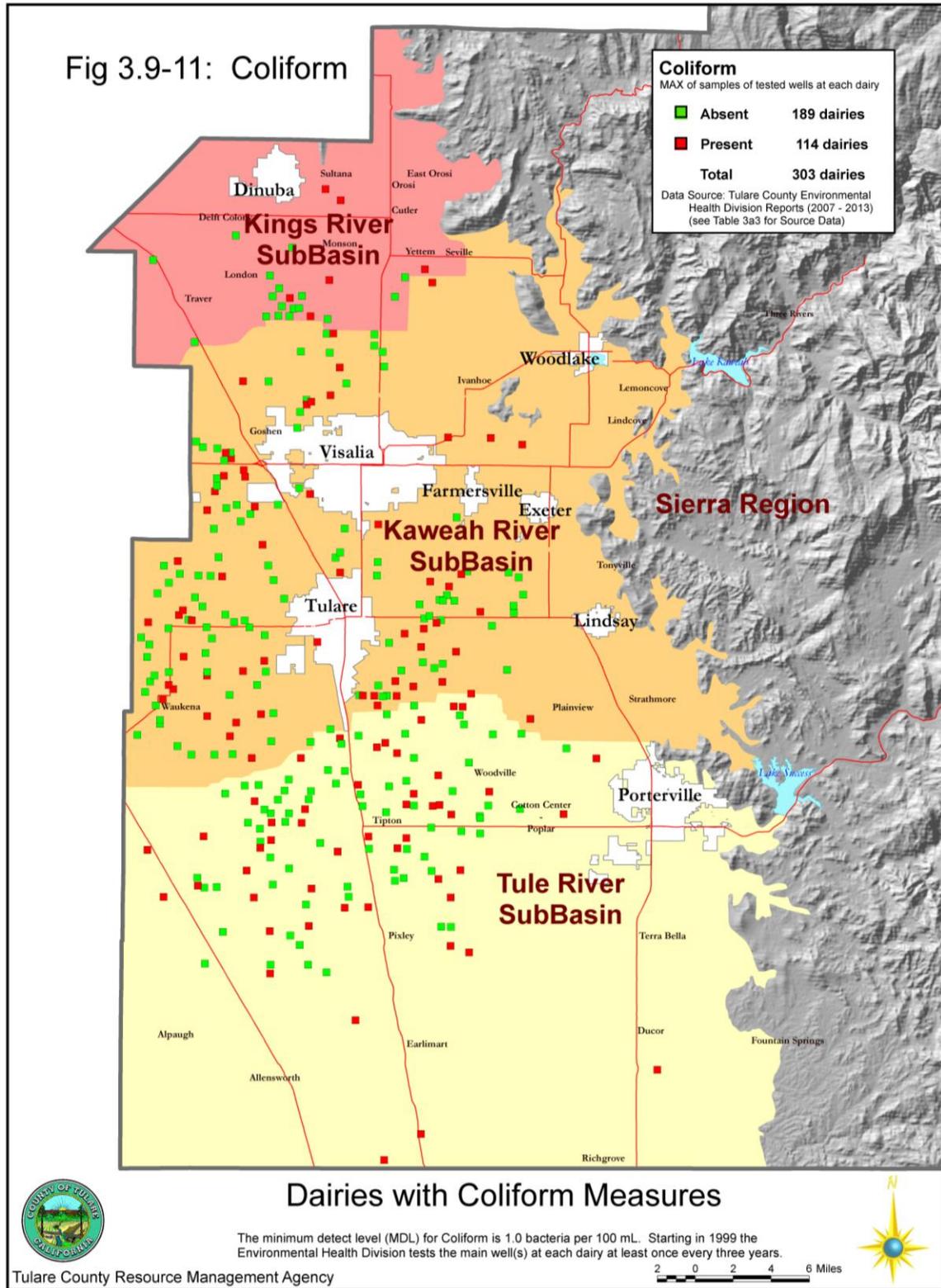
Fig 3.9-10: Salts



DAIRY WELL SALTS MEASUREMENTS vs.
MCL = 700 uS/cm (MEAN)

Figure
3.9 - 10

Fig 3.9-11: Coliform



DAIRY WELL COLIFORM MEASUREMENTS

Figure 3.9 - 11

- “Addressing Nitrate in California’s Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater,” January 2012, principal authors Thomas Harter and Jay Lund of the Center for Watershed Sciences, University of California at Davis. [Hereafter “Harter Report”.]
- “Conclusions of the Agricultural Expert Panel – Recommendations to the State Water Resources Control Board Pertaining to the Irrigated Lands Regulatory Program,” September 2014, principal author Dr. Charles Burt (panel chairman), Irrigation Training and Research Center, California Polytechnic State University at San Luis Obispo. [Hereafter “Expert Panel Report.”]

While both reports cover a comprehensive list of topics, those most relevant to dairies in Tulare County are described below.

Harter Report Summary of Key Findings and Recommendations

The Harter Report contains several findings relevant to Tulare County in general related to the extent of nitrate impacts to drinking water supplies. The report studied an area comprising the four-county (Kern, Kings, Tulare and portions of Fresno) Tulare Lake Basin as well as the Salinas Valley, containing a combined population as of 2012 of about 2.6 million people. Within that region about 254,000 people, or approximately 1 in 10, were determined to be dependent on water supplies described as “susceptible to significant nitrate contamination.” Of these, about 220,000 were reported to be connected to “85 community public or state small water systems” with “high or unknown vulnerability” to nitrate contamination (Harter Report, p. 49). The report recommends that government agencies at the local, regional and state level coordinate to supply safe drinking water to these populations through various measures, including consolidation of customers to larger drinking water systems, treatment, blending of supplies and temporary/interim measures such as providing bottled water or point-of-use treatment.

Equally important is the Harter Report’s discussion of the causes of nitrate contamination and potential to address the issue; these are particularly relevant to agriculture and dairies. Among the key findings:

- “Nitrate problems will likely worsen for several decades. For more than half a century, nitrate from fertilizer and animal waste have infiltrated into Tulare Lake Basin and Salinas Valley aquifers. *Most nitrates in drinking water wells today were applied to the surface decades ago.*” [emphasis added]
- “Agricultural fertilizers and animal wastes applied to cropland are by far the largest regional sources of nitrate in groundwater. Other sources can be locally relevant.”
- Approximately 96 percent of the nitrogen load to groundwater was estimated to come from agriculture, with approximately one-third coming from applied animal wastes such as dairy manure.

- “Nitrate loading reductions are possible, some at modest cost. Large reductions of nitrate loads to groundwater can have substantial economic cost.”
- “Direct remediation to remove nitrate from large groundwater basins is extremely costly and not technically feasible. Instead, ‘pump-and-fertilize’ and improved groundwater recharge management are less costly long-term alternatives.”

The Harter Report notes that “high levels of nitrate affect human health” (p. 9), particularly when drinking water contains more than the federal Maximum Contaminant Level of nitrate, but also notes on page 10 that:

“Nitrogen is key to global food production. Modern agricultural practices, using synthetically produced nitrogen fertilizer, have supplied the nitrogen uses of plants to increase food, fiber, feed, and fuel production for consumption by humans and livestock. Agricultural production is driven by continued global growth in population and wealth, which increases demand for agricultural products, particularly high-value agricultural products such as those produced in California. Global food, feed, and fiber demands are anticipated to increase by over 70% over the next 40 years.”

Expert Panel Report Summary of Key Findings and Recommendations

Findings in the more recent Expert Panel Report are generally consistent with the Harter Report but go into more detail about appropriate strategies for agriculturalists to utilize to minimize future nitrate pollution. The report echoes the Harter Report’s findings that nitrate in groundwater today is largely a legacy issue:

“What is seen in the groundwater today is, by nature, the result of history. It does not necessarily indicate the impacts of current farming practices.” (Page ii)

The Expert Panel proposed a program for minimizing nitrate loads to groundwater via improving irrigation efficiency and other practices with a goal of recording and reporting a ratio of “applied (to crops) nitrogen” divided by “removed” nitrogen (via harvest and nitrogen sequestered in wood of trees, etc.).

Discussion

The findings of both reports as identified above are that use of nitrogen fertilizer in agriculture, including dairy farms where manure is used to cultivate crops, is a major source of nitrates currently in groundwater in the Tulare Lake Basin. The finding of the Harter Report is that a significant portion of the population within Tulare County depends on groundwater for drinking water supply, and that a portion of that groundwater is highly vulnerable to nitrate contamination that has occurred over the past several decades. Both reports find that such contamination is not necessarily representative of current agricultural and dairy practices, but rather is an amalgam

resulting from discharge from agriculture, dairies and other sources over a long period, and that improvements in water quality will take many years to be realized.

Both reports identify as the goal going forward the reduction of nitrate loading to groundwater from historic levels via appropriate management practices. The dairy-relevant specifically identified practices in the Harter Report and Expert Panel Report include:

- “Pump and Fertilize” (Harter, p. 2);
- Nitrogen loading reductions (Harter, p. 2);
- Irrigation improvements (Expert Panel, p. ii);
- Manage nitrogen fertilizer and manure to increase nitrogen use efficiency (Harter, p. 3);
- Improve storage and handling of fertilizers and manure (Harter, p. 3); and
- Record and report ratio of applied versus removed nitrogen (Expert Panel).

All of the above practices are required on dairy farms in Tulare County. Dairies are required under Central Valley Regional Water Quality Control Board General Order R5-2013-0122 (2013 General Order) to have a Nutrient Management Plan (*NMP*) prepared by a certified professional, and to implement the *NMP*, including submittal of annual reports to the *CVRWQCB* detailing nutrient application and removal. *NMPs* must account for nitrogen in irrigation water, and are thereby consistent with the “pump-and-fertilize” recommendation in the Harter Report. *NMPs* also explicitly require management of manure and fertilizer to increase nitrogen use efficiency, thereby reducing nitrogen loading. The 2013 General Order requires data recording and reporting inclusive of (and above and beyond) what is recommended by the Expert Panel. The 2013 General Order also contains specific requirements related to storage and handling of manure, including an engineered Waste Management Plan prepared by a licensed civil engineer. Finally, *NMPs* tend to drive improvement in irrigation efficiency where needed to meet goals of the *NMP*.

Besides what is already required as described above, the 2013 General Order requires all dairies in Tulare County to conduct individual groundwater monitoring or participate in a representative iterative groundwater monitoring program. Data is reported annually to the *RWQCB* and, as a condition of the 2013 General Order, the data must be evaluated to determine whether current practices are protective of groundwater quality. If practices are not found to be protective, dairies are required to propose additional or modified management practices no later than 2019 for consideration and adoption by the *RWQCB*.

Considering the above facts, the Animal Confinement Facilities Plan’s reliance on *CVRWQCB* water quality regulations is consistent with the recommendations in these expert reports.

Dairy Ponds

Manure retention ponds, sometimes called lagoons, are a common feature on many Western- style dairies, including the majority of dairies in California and many in Tulare County. Ponds are large earthen in-ground or above-ground vessels where manure and water is stored until it can be used as a crop fertilizer. Water stored in ponds can also be re-used to clear manure from barn floors.

Benefits of Ponds to Dairy Management

Ponds play a critical role in dairy manure management, serving several important functions.

- **Cleaning manure from barn floors.** Retention ponds serve as a place for temporary storage of manure and process water, allowing the use of water and recycled water to flush manure from barns. This allows for cleaning of manure from barns several times daily, improving animal health, reducing air emissions and generally improving barn cleanliness while reducing labor and use of fossil fuel needed for alternative cleaning methods. Ponds not only provide a place to hold and store wash water and manure, but also allow for re-use of the water to irrigate and fertilize crops.
- **Control precipitation, runoff and process water.** Ponds provide an effective way to capture runoff from the dairy facility that must be kept on the property. By designing the animal housing areas to drain to the pond, runoff from washing milk barns, washing cows, flushing manure, and precipitation can be captured and stored until it can be reused.
- **Fertigation.** Storing liquid manure (that is, manure and process water) in ponds allows for it to be blended with irrigation water and applied to crops during the growing season, providing both irrigation and fertilizer (fertigation). This allows for more consistent agronomic application of crop nutrients, which benefits water quality by reducing unnecessary leaching of fertilizers below the root zone. Solid manure can generally only be applied pre-plant, while liquid manure can be added while crops are actively growing.

Design and Operation of Ponds

Although dairy retention ponds are designed for temporary storage of manure (in contrast to landfills, which serve as a permanent waste storage area), they must be designed to minimize environmental impacts. Potential impacts include leaching of water and manure constituents (such as salts and nitrogen compounds) into soil and groundwater below and surrounding the pond. If ponds do not have adequate capacity, they may also overflow. Ponds must be managed to ensure they do not fill with silt, sand or manure solids as this reduces their design capacity to hold enough liquids. Ponds must also be managed to present nuisances such as weeds, vectors (mosquitoes and flies) and excessive odors. Proper design and maintenance of lagoons can mitigate all of these issues significantly.

There is a long history of design standards for dairy retention ponds. Title 27, subsection 22560-565 of the California Code of Regulations set standards for retention ponds to be constructed with at least 10 percent clay and no more than 10 percent gravel, with the intent of reducing the ability of liquids stored in the pond to permeate to groundwater. The current Water Quality Control Plan for the Tulare Lake Basin region further requires that dairy ponds built after 1995 “shall be designed and constructed to retain all facility wastewater generated, together with all precipitation on, and drainage through, manured areas during a 25-year, 24-hour storm” and that “New manure retention ponds shall be sited, designed, constructed, and operated to ensure that the invert of the ponds will be at least 5 feet above the highest anticipated elevation of underlying groundwater.”²²

Pond design standards were further strengthened in 2007 with the adoption of General Order R5-2007-0035 (later reissued as the 2013 General Order). These standards state that newly constructed or newly expanded ponds must comply either with:

- Tier 1: A pond designed to consist of a double liner constructed with a 60-mil high density polyethylene or material of equivalent durability with a leachate collection and removal system between the two liners; or
- Tier 2: A pond designed in accordance with California Natural Resource Conservation Services (NRCS) Conservation Practice Standard 313 or equivalent and which the Discharger must demonstrate through submittal of technical reports that the alternative design is protective of groundwater quality.²³

Requirements for Existing Ponds

Dairy manure retention ponds constructed prior to the adoption of the standards identified above are not required to be reconstructed to meet the standards. However, the 2013 General Order does require that dairies, either individually or through approved Representative Monitoring Programs, assess performance of existing lagoons. That assessment must determine if groundwater quality is protected by current management practices, and if determined to not be protective, corrective actions must be taken.

The Central Valley Dairy Representative Monitoring Program (CVDRMP),²⁴ an approved CVDRMP, is currently assessing performance of existing lagoons through an intensive, multi-year program that includes groundwater monitoring, subsurface geologic investigation of lagoon perimeters, seepage testing and other data collection and analysis. CVDRMP has reported data showing that seepage from many monitored ponds is impacting groundwater quality. CVDRMP will continue its testing and assessment of ponds in 2015-18, assessing not only lagoon performance (including ponds in Tulare County), but also assessing opportunities for improved management of ponds. CVDRMP is required by the 2013 General Order to provide recommendations for improved pond management to the RWQCB by 2019. This program continues the trend of improved information and design standards that dates back to the 1970s in California.

Relative Contribution of Ponds to Nitrate Loading

Information from the University of California and the CVDRMP both suggests that dairy ponds play a relatively small role in overall loading of nitrogen compounds to groundwater in a dairy setting. This is partly because ponds are designed to be relatively less permeable than cropland and are much smaller than the footprint of the surrounding cropland. Nutrients stored in the ponds have a much greater chance of entering groundwater after they leave the pond and are applied to crops than they do while stored in the pond itself.

The 2012 report to the California Legislature, “Addressing Nitrate in California’s Drinking Water”²⁵ noted that throughout the Salinas Valley and the entire four-county Tulare Lake Basin,

the total area-wide contribution of nitrates from manure storage lagoons was about 220 tons annually, about 1,000 times less than the nitrogen loading from fertilized cropland in the same area.

CVDRMP has reported similar results in its monitoring of existing dairy lagoons. During the winter of 2013-14, *CVDRMP* tested seepage at eight dairy ponds in Stanislaus and Merced Counties (with significantly less land base than typical Tulare county dairies) built between the 1960s and 2005. Seepage rates were estimated on a preliminary basis to range between 0.02 – 3 percent and four percent (with the exception of one dairy (with only 150 acres) at 15 percent) of total dairy nitrogen loading (cropland accounting for the remainder). Further, though all eight lagoons were constructed prior to the Tier 2 standards for new lagoons adopted by the *RWQCB* in 2007, six of the eight lagoons performed better than those Tier 2 standards.²⁶

Flood Hazards

The east side of Tulare County is drained primarily by the Kings, Kaweah, and Tule Rivers. Small streams, which are usually dry, except during winter and spring runoff, drain the foothills of the Sierras.

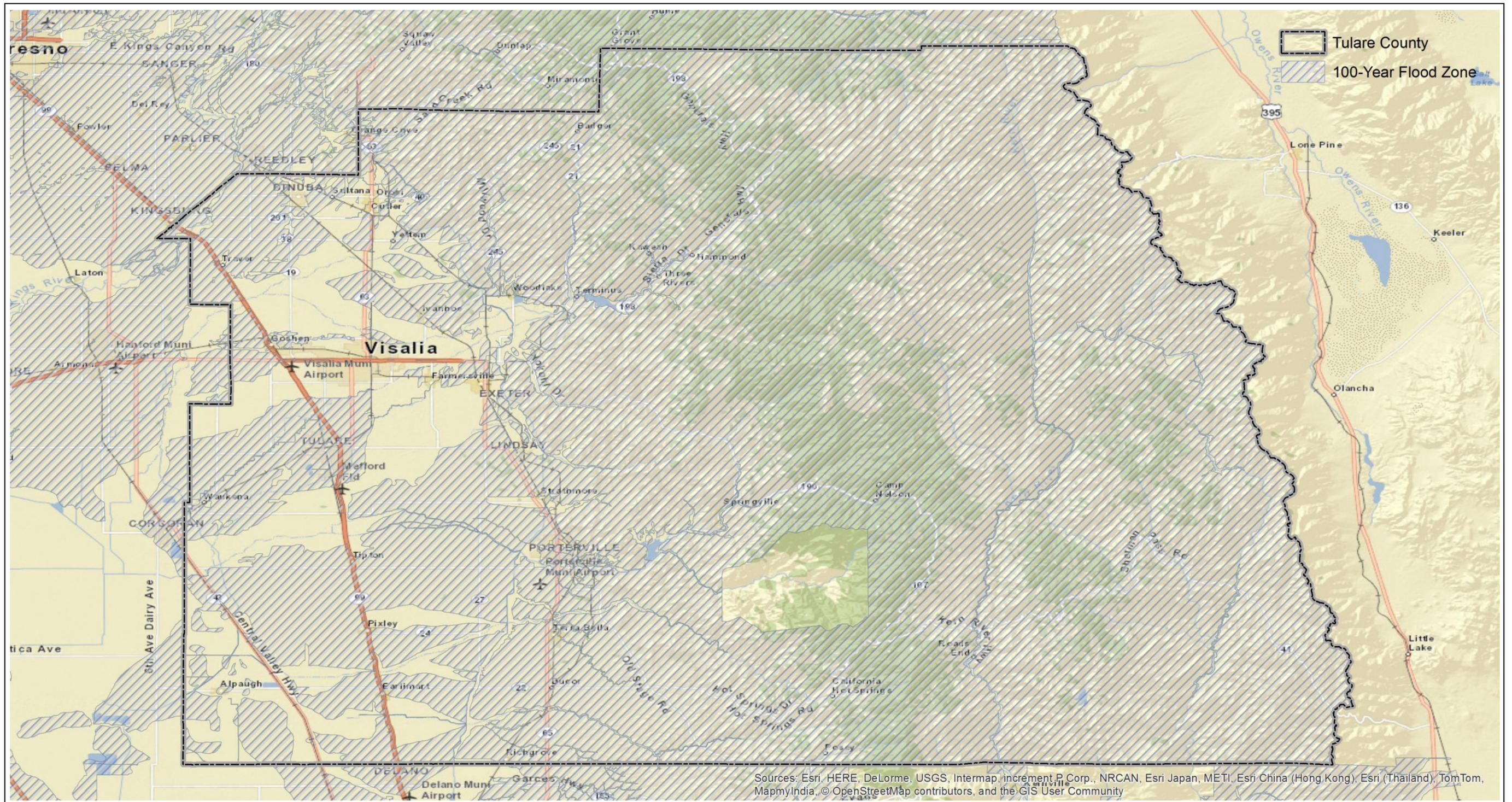
Two kinds of flooding occur in the Central Valley: general rainfall floods occurring in the late fall and winter and snowmelt floods occurring in the late spring and early summer. Most floods are produced by extended periods of precipitation during the winter months. Floods also occur when large amounts of water (due to snowmelt) cause an increase in the amount of water that must be released from reservoirs.

Tulare County has a long history of flooding, but minimal definitive data is available for specific floods, particularly on the smaller streams. As recently as 1997 and 1998, areas in the foothills, including the communities of Three Rivers and Springville, sustained flooding as heavy rains swelled creeks over their banks. The City of Lindsay and the community of Earlimart sustained flooding in their vicinities during this same period.

100-Year Flood Hazards

FEMA determines areas subject to flood hazards and designates these areas by relative risk of flooding on a map for each county or each community, the Flood Insurance Rate Map (*FIRM*). The boundaries of the 100-year floodplain are delineated by *FEMA* on the basis of hydrology, topography, and modeling of flow during predicted rainstorms. The 100-year flood is defined as the flood event that has a one percent chance of occurring in any given year.

The flood carrying capacity in Tulare County rivers and streams has decreased as trees, vegetation, and structures (e.g., bridges, trestles, buildings) have increased along the Kaweah, Kings, and Tule Rivers. Updated channel analyses have not been performed to determine the amount of obstruction posed by such vegetation and development. Figure 3.9-12 shows areas of the county that fall within *FEMA*-designated 100-year flood zones.



FEMA 100-YEAR FLOOD ZONES

Figure 3.9 - 12

Dam Failure Inundation/Levee Failure

Two major dams could cause substantial flooding in Tulare County in the event of a failure: Terminus Dam on Lake Kaweah and Success Dam on Lake Success. In addition, there are many smaller dams throughout the county that would cause localized flooding in the event of their failing. Figure 3.9-3 shows areas of the county that could be subject to dam inundation in the event of dam failure.

Dam failure can result from numerous natural or human activities, such as earthquakes, erosion, improper siting, rapidly rising flood waters, and structural and design flaws. Flooding due to dam failure can cause loss of life, damage to property, and other ensuing hazards.

Levees have been built throughout the County to increase available land for agriculture and to protect against flood flows. Such levees rarely meet current standards for flood protection. Identification of potential levee failure and prevention of development in affected areas has been found to be more effective than fixing such problems through higher levees. Continued encroachment by adjacent property owners, budget limitations, along with environmental limitations on maintenance of natural and manmade watercourses has resulted in reduced effectiveness of these structures.

IMPACTS

Impact #3.9-1 – Violation of Water Quality Standards or Waste Discharge Requirements; Otherwise Substantially Degrade Water Quality: [Evaluation Criteria (a), (f)]

Construction activities associated with expanded or new dairies and other bovine facilities would have the potential to cause adverse water quality impacts, as would Dairy *CAP GHG* reduction strategies that require construction. However, the required construction *NPDES* general permit would require a stormwater pollution prevention plan (*SWPPP*) to be implemented for any ground disturbance greater than 1 acre. The *SWPPP* would identify the sources of pollutants that may affect the quality of storm water and would include construction site best management practices (*BMPs*) to control minimize pollutants (sedimentation/siltation) in runoff.

During facility operations, application of dry or liquid waste on fields may result in high soil concentrations of several pollutants, including nitrate, nitrite, ammonia, coliform, *TDS*, sodium, and chloride. When the soil is saturated, such pollutants have the potential to leach into groundwater, affecting the groundwater quality and thereby the beneficial uses of the groundwater. Corrals and wastewater holding ponds and manure stockpiling for future applications are additional potential sources of contaminants to the groundwater. The soil type and depth to groundwater would affect the transport rate of pollutants to the groundwater and the potential for groundwater quality impairment.

If facilities are not properly designed and constructed, surface runoff and wastewater could also adversely affect surface water quality. However, the *CVRWQCB* General Order for Existing Milk Cow Dairies, Order No. R5-2013-0122, minimizes the potential for surface water quality impacts

through several discharge prohibitions that are also incorporated into the Waste Discharge Requirements for new and expanding dairies. The following activities are prohibited: the direct discharge of waste or stormwater from the production area to surface waters except when authorized by an *NPDES* permit; the discharge of waste which causes or contributes to water quality standards violations; the discharge of wastewater to surface waters from cropland; the application of process wastewater to a land application area before, during, or after a storm event that would result in runoff of the applied water; and the discharge of stormwater to surface water from a land application area where manure or process wastewater has been applied unless the land application area has been managed consistent with a certified Nutrient Management Plan.

CVRWQCB regulation of the operation of expanded or new dairies and other bovine facilities would reduce water quality impacts to groundwater. *ACFP* policy 2.4-1 provides that expanded and new dairies and other bovine facilities must comply with state “Title 27” requirements for confined animal facilities, and submit a Report of Waste Discharge to the *CVRWQCB* prior to issuance of building permits and at least 120 days prior to the discharge. The *CVRWQCB* regulates groundwater quality impacts of all new or expanding dairies. These regulations are designed to assure, through provisions of Waste Discharge Requirements incorporating General Order water quality protection measures, that groundwater impacts are minimized. The General Order provides that discharge of waste shall not cause the underlying groundwater to exceed water quality objectives or unreasonably affect beneficial uses. Specific measures protecting water quality, as described in the “Waste Discharge Requirements for Dairies” subsection of the regulatory setting section presented above, include preparation and implementation of a Waste Management Plan for the production area and a Nutrient Management Plan for land application areas, and detailed water quality monitoring and reporting requirements.

Also, water quality would be protected by several *ACFP* provisions. Groundwater quality would be further protected by *ACFP* Policy 2.3-2, which prohibits confined animal improvements in shallow or perched groundwater areas where the minimum vertical distance between proposed lagoon/bottoms/corral surfaces and highest anticipated groundwater levels is less than five feet. *ACFP* condition 7 prevents wells from being located within 100 feet of animal enclosures. *ACFP* condition 8 requires lagoons and other manure containment facilities to be located at least 150 feet from wells, public ditches, and public waterways. Lastly, the conformance checklist for determining whether an individual facility is within the scope of this program *EIR* requires demonstration that the facility is in compliance with existing *WDRs*.

Conclusion: *RWQCB* and County regulation would prevent significant water quality degradation at the vast majority of new or expanded dairy and other bovine facilities. However, it cannot be guaranteed that all future project-level water quality impacts would be mitigated to a less than significant level, and water quality could be substantially degraded. This impact is therefore *significant*.

Mitigation Measure #3.9.1: The County will require, as a component of the *ACFP* Annual Compliance Report, owners to submit evidence of full compliance with all pertinent *CVRWQCB* regulations and Waste Discharge Requirements. If there is evidence of non-compliance, the County will notify the *CVRWQCB* and require the owner to submit a Corrective Action Plan.

Significance after Mitigation: Because it cannot be guaranteed that all future project-level water quality impacts would be mitigated to a less than significant level, and water quality could be substantially degraded, this impact is considered *significant and unavoidable*.

Impact #3.9.2 – Depletion of Groundwater Supplies or Interference with Groundwater Recharge:
[Evaluation Criteria (b)]

The Programmatic Water Supply Evaluation (Appendix G) has calculated Program-required confined animal water usage as 70 per bovine animal (120,000), 9,400 acre feet per year. It has calculated onsite and offsite incremental water usage for bovine animal feed production (alfalfa, corn, and small grain) as 130,000 acre feet per year. Such crops are not able to utilize drip irrigation or similar irrigation water reduction practices. The gross proposed Program incremental water demand would be 134,900 acre feet per year.

Because much of the (80%±) of the Program-estimated dairy/bovine facility growth would occur on land already being irrigated for crops, net water demand has been calculated in the Evaluation as 48,400 acre feet per year. With water rights-limited surface water supplies, most of this demand would be met by groundwater and would substantially deplete the County's groundwater resources.

Conclusion: Because groundwater supplies would be substantially depleted, this impact is considered *significant*.

Mitigation Measure #3.9.2: Applicants for expanded and new dairy and other bovine facilities may be required to prepare a project-specific water supply analysis to evaluate the local surface and groundwater conditions relevant to the proposed project location and whether adequate water supplies are available at that specific location. From this site-specific assessment, the County will understand:

- Specific water management and water use projections associated with the proposed *ACFP* operations, including liquid manure management, cropping plans, and facility management;
- Planned water sources to meet projected water needs;
- Local groundwater conditions and sustainable management efforts, if any, as part of the overlying Groundwater Sustainability Agency with jurisdiction; and
- Local surface water reliability and availability conditions in relation to projected water needs.

Significance after Mitigation: Although this mitigation measure would reduce the proposed Program's groundwater and water supply impacts, because groundwater supplies would still be substantially depleted, this impact is considered *significant and unavoidable*.

Impact #3.9.3 – Drainage Pattern Alterations Causing Erosion or Siltation:
[Evaluation Criteria (c)]

Construction activities associated with expanded or new dairies and other bovine facilities would include drainage pattern alterations that have the potential to cause erosion or siltation, as would *CAP GHG* reduction strategies requiring construction. However, the construction *NPDES* general permit would require a stormwater pollution prevention plan (*SWPPP*) to be implemented for any ground disturbance greater than 1 acre. The *SWPPP* would identify the sources of pollutants that may affect the quality of storm water and would include construction site best management practices (*BMPs*) to control erosion and minimize pollutants (e.g., sedimentation/siltation) in runoff.

Conclusion: The proposed Program would not substantially alter drainage patterns in a manner which would result in substantial erosion or siltation. The proposed Program impacts would be *less than significant*.

Mitigation Measures: None are required.

Impact #3.9.4 – Drainage Pattern Alterations or Runoff Causing Flooding or Pollution:
[Evaluation Criteria (d), (e)]

Construction activities associated with expanded or new dairies and other bovine facilities would include drainage pattern alterations or generate runoff that could cause flooding or water pollution. *CAP GHG* reduction strategies requiring construction could have similar impacts. However, these impacts would be lessened because of *ACFP*-required permit restrictions and the General Order's discharge prohibitions that minimize surface water quality impacts. (See Impact #3.9.1).

Conclusion: Because the proposed Program would not result in flooding on- or off-site, or contribute runoff water which would exceed the capacity of stormwater drainage systems or provide substantial additional sources of polluted runoff, this impact is *less than significant*.

Mitigation Measures: None are required.

Impact #3.9.5 – Flood Hazards and Dam or Levee Failure:
[Evaluation Criteria (g), (h), (i)]

The proposed Program would not place structures that would impede or redirect flood flows within a 100-year flood hazard areas because *ACFP* policy 2.3-1 prohibits confined animal improvements within primary flood zone areas, including 100-year flood hazard areas.

Figure 3.9-3 illustrates dam failure-related “8 hour” flood waters from the Kaweah River's and Tule River's two dams (Terminus and Success) which could affect Program area dairies and bovine facilities. However, with the low probability of a dam failure occurrence and the relatively long warning period to ready dairy and other bovine facilities for flooding, inundation related to dam failure is not a significant risk.

There is, however, a history of levee failures in the County (Cottonwood Creek, St. John's River). There are no State or County programs to implement levee maintenance in the County. The Department of Water Resources Levee Repairs and Floodplain Management Office, while charged with Valley wide levee analysis, is appropriately first concentrating its studies on the Delta and Marysville/Yuba City areas.²⁷ Flooding in Tulare County from levee failure has been very infrequent and does not exceed 100 year flood levels, which are basically determined by topography. Confined animal facility elevation above 100 year flood levels is required by *ACFP* Policy 2.3.

Conclusion: Based on the above analysis, impacts of dam failure inundation and levee failure are *less than significant*.

Mitigation Measures: None are required.

**Impact #3.9.6 – Seiche, Tsunami, Mudflow Impacts:
[Evaluation Criteria (j)]**

The distance of the project area from any seiche-capable or tsunami-capable large bodies of water, and the level topography of the project area, would preclude inundation impacts on expanded or new dairy and other bovine facilities. The general terrain of the Valley floor does not support mudflow events.

Conclusion: There are *no impacts* associated with inundation by seiche, tsunami, or mudflow.

Mitigation Measures: None are required.

REFERENCES

¹ Central Valley Regional Water Quality Control Board, Region 5. 2004. Water Quality Control Plan for the Tulare Lake Basin Second Edition. Revised January 2004 with Approved Amendments. Available: http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/tlbp.pdf.

² See “Managing Dairy Manure in the Central Valley of California,” published by the University of California Committee of Experts on Dairy Manure Management, 2005. <http://groundwater.ucdavis.edu/files/136450.plf> (accessed October 2014)

³ Assessment of Nitrous Oxide Emissions in California's Dairy Systems, DRAFT FINAL REPORT, California Air Resources Board, Contract No. 09-325, William R. Horwath, Martin Burger, Stuart Pettygrove, <http://www.arb.ca.gov/research/rsc/10-18-13/item6dfr09-325.pdf>

⁴ *Ibid.*, p.47

⁵ Information in this section per personal communication with Doug Patteson, Dairy Program Chief, Central Valley Regional Water Quality Control Board, November 7, 2014

⁶ Program information at <http://cdf.org/home/checkoff-investments/cdqap/about-the-environmental-stewardship-program/>, accessed November 25, 2014.

⁷ Personal communication with Mike Francesconi, California Department of Food and Agriculture, Dairy Marketing Branch, November 7, 2014.

⁸ California Department of Water Resources. 2012. California State Water Project Water Supply. Available: <http://www.water.ca.gov/swp/watersupply.cfm>. Site Accessed: 2/2012.

⁹ Tulare Lake Basin Hydrology and Hydrogeography, 12, April 2007, US EPA 909RO 7002

¹⁰ Water Quality Control Plan for the Tulare Lake Basin, Second Edition, 2015, Central Valley Regional Water Quality Control Board, Central Valley Region, Table II-1, III-1, III-2, and III-3.

¹¹ California Water Plan, Final, 2013, Volume 2, Regional Reports, Tulare Lake Hydrologic Region

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- ¹⁵ Keller, Wegley & Associates. 2006. Water Resources General Plan Update, County of Tulare. Page C-8.
- ¹⁶ California Department of Water Resources. 2009. Working Draft of the California Water Plan Update. Table 8- b, page 3.
- ¹⁷ Source: DWR 2010 water budget for Tulare County.
- ¹⁸ This generalized relationship does not address variances in precipitation, cropping choices, or other factors affecting overall supply and demand conditions in a given year.
- ¹⁹ Central Valley Regional Water Quality Control Board database, dairy well monitoring once each year (nitrogen and salts)
- ²⁰ Tulare County Information and Technology Agency water quality database
- ²¹ Tulare County Environmental Health Division (Coliform)
- ²² http://www.waterboards.ca.gov/rwqcb5/water_issues/basin_plans/tlbp.pdf Accessed November 25, 2014.
- ²³ http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0122.pdf, page 17, Accessed November 25, 2014.
- ²⁴ <http://dairycares.com/CVDRMP>, accessed November 27, 2015
- ²⁵ Page 3, executive summary, “Addressing Nitrate in California’s Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater,” January 2012, principal authors Thomas Harter and Jay Lund of the Center for Watershed Sciences, University of California at Davis. <http://groundwaternitrate.ucdavis.edu>
- ²⁶ Personal communication with Till Angermann, Technical Program Manager, CVDRMP, November 2014.
- ²⁷ Department of Water Resources Levee Repair/Levee Evaluation Program, 2016
<http://www.water.ca.gov/levees/evaluation>

3.10 Land Use/Population/Housing

INTRODUCTION

The purpose of this section is to evaluate land use, population, and housing impacts associated with the proposed Program.

IMPACT EVALUATION CRITERIA

CEQA criteria for evaluation of impacts are:

Would the project:

- a) *Physically divide an established community?*
- b) *Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*
- c) *Conflict with any applicable habitat conservation plan or natural community conservation plan?*
- d) *Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*
- e) *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*
- f) *Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?*

REGULATORY SETTING

The following environmental and regulatory settings were summarized, in part, from information contained in the Tulare County General Plan 2010 Background Report.¹

There are no federal or State land use, population or housing regulations relevant to the proposed Program.

Local Regulations

Rural Valley Lands Plan

The Tulare County General Plan was updated in 2012. The General Plan update included an update to the Rural Valley Lands Plan (*RVLP*). The *RVLP* applies to about 773,500 acres of the valley portion of the County, outside County adopted Urban Development Boundaries (*UDB*), City Urban Area Boundaries (*UAB*) and other adopted community plan areas, and generally below the 600-foot elevation contour line along the foothills of the Sierra Nevada Mountain Range. The Kings River Plan is a sub-area plan that supersedes the *RVLP*, but is consistent with it.

The purpose of the *RVLP* is to protect and maintain the agricultural viability of rural valley areas by establishing requirements for exclusive agricultural zoning (containing minimum parcel sizes) appropriate to sustain agriculture and implementing a policy that utilizes resource information to determine the suitability of rural lands for non-agricultural uses. The goal of the *RVLP* is to "sustain the viability of Tulare County agriculture by restraining division and use of land which is harmful to continued agricultural use."

Animal Confinement Facilities Plan

The County of Tulare Phase 1 *ACFP* Amendment was adopted to be consistent with the other elements of the County of Tulare General Plan. The *ACFP*'s policies and standards address new and expansion of dairies and other bovine animal confinement operations and their potential environmental impacts. The purpose of the proposed Program is to update the provisions of the *ACFP*.

Habitat Conservation Plans

The County of Tulare has not adopted a habitat conservation plan or a natural community conservation plan.

The Kern Water Bank Habitat Conservation Plan (*KWBHCP*) is the only approved governmental habitat conservation plan (*HCP*) that exists in Tulare County. The *KWBHCP* was approved by the *USFWS* on October 2, 1997 and protects a total of 22 federally listed species and 29 non-listed species. The *HCP* covers a 19,900-acre area located in Tulare, Kern, and Kings Counties. The species protected in this *HCP* included the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), California condor (*Glymnogyps californianus*), Conservancy fairy shrimp (*Branchinecta conservation*), San Joaquin kit fox, and western snowy plover (*Charadrius alexandrinus*).²

Pacific Gas and Electric Company (*PG&E*) has, however, adopted the *PG&E* San Joaquin Valley Operational and Maintenance Habitat Conservation Plan³ which covers wildlife and plant species for 33 routine operations and maintenance activities (*O&M*) for *PG&E*'s electric and gas transmission and distribution systems within nine counties of the San Joaquin Valley, includes portions of Tulare County.

ENVIRONMENTAL SETTING

Land Use

Tulare County is located in a geographically diverse region with the Sierra Nevada located at its eastern region, while its western portion includes the San Joaquin Valley floor, which is very fertile and extensively cultivated. In addition to its agricultural production, the County's economic base also includes agricultural packaging and shipping operations. Manufacturing plants are generally located in the western part of the county.

Agricultural uses, which include row crops, orchards, dairies, and grazing lands on the Valley floor and in the foothills total over 2,020 square miles or about 43 percent of the entire County area. Urban uses such as incorporated cities, communities, hamlets, other unincorporated urban uses, and infrastructure rights-of-way make up the remaining land uses in the County.

Existing Land Uses

Existing land uses have been organized into generalized categories that are summarized on Table 3.10-1. (The 2008 land uses shown in Table 3.10-1 are similar to those for 2011, the *EIR* baseline year, because relatively little land use change occurred in the County between 2008 and 2011.) These lands uses total approximately 3,930 square miles or about 81 percent of Tulare County. Open space uses, which includes wilderness, national forests, monuments and parks, and county parks, encompass approximately 1,230 square miles, or about 25 percent of the County. Agricultural uses total over 2,150 square miles or about 44 percent of the entire county. Incorporated cities in Tulare County occupy less than three percent of the entire County.¹

**Table 3.10-1
Summary of Assessed Land by Generalized Use Categories, Tulare County, 2008**

Generalized Land Use Category	Square Miles	Percentage
Residential	110	2
Commercial	10	Less than 1%
Industrial	10	Less than 1%
Agriculture	2,150	44
Public (including airports, charitable organizations, churches, fraternal organizations, government owned land, hospitals and rest homes, institutional facilities, rehab facilities and schools)	420	9
Open Space (including national forests and parks, timber preserves)	1,230	25
Classified Subtotal	3,930	81
Unclassified (includes streets and highways, rivers, canals, etc.)	780	16
Unincorporated County Subtotal	4,710	97
Incorporated Cities	130	3
Total County	4,840	100

Source: County of Tulare 2010 General Plan Background Report

Population

The California Department of Finance (*DOF*) provides population estimates for Tulare County. According to *DOF* population estimates, between 1990 and 2000, Tulare County grew by about

18 percent, from 311,920 to 368,020 persons. During this period, the population growth averaged about 1.7 percent per year. After 2000, the County experienced an average yearly population growth of 2.2 percent, for a total (2007) population of 429,010,⁴ The 2010 U.S. Census population estimate was 442,179,⁵ while *DOF*'s population estimate for 2012 was 452,301.⁶

Housing

Total housing units in Tulare County in 2010 were 141,696.⁷ The dairy industry's existing employee housing demand at this time may be calculated as:

302 dairies x 16 employees per dairy = 4,832 homes⁸
28 feedlots x 4 employees = 112 homes
Total demand = 4,944 homes

The percentage of housing units attributable to dairy facility employment was thus
 $4,944 \div 141,696 = 3.5\%$.

Significant numbers of agricultural employees live in rural unincorporated communities where the average housing costs tend to be lower, and the community distance to employment is shorter.

Employment

The dairy/bovine farms represent a small percentage (>3%, or about 4,800 employees as calculated in the Housing discussion, below) of employment when compared to the County's overall employment (approximately 169,000 [EDD, May 2012 estimate]). Overall, agriculture-related employment was about 38,000 in 2010.⁹ With approximately 4,800 employees, the dairy/bovine industries make up approximately 12.6% of all agriculture-related jobs.

IMPACTS

Impact #3.10.1 - Division of an Established Community: [Evaluation Criteria (a)]

New or expanded dairies and other bovine feedlot facilities would be confined to rural agricultural areas, and therefore would not, divide an established city or rural community in the County.

Conclusion: Because the proposed Program would not physically divide an established community, the proposed Program will result in *no impacts*.

Mitigation Measures: None are required.

Impact #3.10.2 - Existing Plans and Policies Compliance:
[Evaluation Criteria (b)]

The proposed Program has been prepared to be consistent with the other elements of the Tulare County General Plan. The policies of the proposed Program reinforce, and are reinforced by, the County's General Plan.¹⁰ (Consistency of the Draft Dairy CAP with the County General Plan CAP is analyzed in Impact #3.7.2.)

Conclusion: Because the proposed Program is consistent with the Tulare County General Plan, the impact is *less than significant*.

Mitigation Measures: None are required.

Impact #3.10.3 - Habitat Conservation Plan Conflicts:
[Evaluation Criteria (c)]

The PG&E operations and maintenance HCP principally manages the activities of PG&E but also covers activities of third parties that execute contracts with PG&E that require HCP compliance. There is no evidence that new or expanded dairy or other bovine facilities would be located within the Habitat Conservation Plan's designated boundaries.¹¹

Neither the County of Tulare, nor its cities, has adopted a HCP or other local conservation plan. Pacific Gas and Electric Company (PG&E) has, however, adopted a HCP for its Valley facilities, including those in Tulare County. The HCP governs potential habitat impacts caused by PG&E facilities or their maintenance. Activities under the proposed Program would therefore not conflict with the PG&E HCP. The Kern Water Bank HCP, which is confined to Kern County near Bakersfield, can be amended to allow for that HCP to extend legal coverage to other, non-related projects. To qualify for coverage, a project would need to be situated in Kern, Kings, or Tulare counties, the United States Fish and Wildlife Service would need to agree to amend the HCP for the specific project, and conservation credits for the project would need to be purchased from the Kern Water Bank. Activities under the proposed Program would not conflict with the Kern Water Bank HCP.

Conclusion: Because the proposed Program would not conflict with the PG&E HCP nor the Kern Habitat Conservation Plan, the proposed Program impact is *less than significant*.

Mitigation Measures: None are required.

Impact #3.10.4 – Population and Housing:
[Evaluation Criteria (d)(e)(f)]

Population and Housing Demand: Dairies and feedlots in Tulare County, dependent on herd size, have an average of 16 employees⁷ working during various shifts over a 24-hour period; indirect dairy- or bovine-related employment (for example: milk processing, cheese production, and ice cream production) is substantial.

In 2013 there were 302 dairies and 28 feedlots providing employment for just over 4,900 Tulare County residents. Over the next 10 years the demand for dairy products is expected to grow, resulting in a projected 12% increase in employees from 4,900 to approximately 5,500 by 2023. With unemployment in Tulare County typically fluctuating from 9 percent to 18 percent, new jobs in the dairy/confined-bovine industry are not anticipated to have a significant effect on population growth or housing demand. New jobs would largely be filled by existing County residents, rather than by employees relocated from outside the County.

Based upon this above analysis, any population or housing demand increases associated with the proposed Program would not be substantial.

Population or Housing Displacement: Expanded and new dairies and other bovine facilities would be located in rural areas of the County and thus would not displace substantial numbers of housing or people. Dairy and other bovine facilities would be limited to areas zoned for agricultural uses which have little existing housing.

Conclusion: Because the proposed Program would not induce substantial population growth or displace substantial numbers of existing housing or people, proposed Program impacts are *less than significant*.

Mitigation Measures: None are required.

REFERENCES

- ¹ County of Tulare. 2010. General Plan Background Report. <http://generalplan.co.tulare.ca.us>
- ² Kern Water Bank Habitat Conservation, 1997. <http://www.kwborg/index.cfm/fuseaction/Pages/Page/id/491>
- ³ PG&E. 2006. San Joaquin Valley Operations and Maintenance HCP. <http://www.pge.com/en/about/environment/pge/stewardship/habitat/index.page>
- ⁴ California Department of Finance. 2007. E-4 Historical Population Estimates for City, County and the State, 1991-2000, with 1990 and 2000 Census County. Sacramento, CA. <http://www.dof.ca.gov/research/demographic/reports/estimates/3-4/1991-2000>
- ⁵ Tulare County Association of Governments. 2008. Table 2: Historical City/County Population Estimates, 1991-2007, with 1990 and 2000 Census Counts. Data provided by Mark Hays, TCAG Associate Regional Planner.
- ⁶ Department of Finance. 2012 population estimate. <http://www.dof.ca.gov/research/demographic/reports/estimates/e-2/view.php>, accessed December 6, 2015.
- ⁷ Tulare County, California USBoundary.com
- ⁸ Rob Vandenheurel, General Manager, Milk Producers Council, Email response on July 3, 2014
- ⁹ Workforce Investment Board Of Tulare County, Agri-Business Industry Report 2010 http://www.tularewib.org/documents/Sector%20Report_Agribusiness.pdf
- ¹⁰ Tulare County General Plan 2030 Update, Page 3-4 <http://generalplan.co.tulare.ca.us>
- ¹¹ Pacific Gas & Electric. 2006. PG&E San Joaquin Valley Operational and Maintenance Habitat Conservation Plan. <http://www.pge.com/en/about/environment/pge/stewardship/habitat/index.page>

3.11 Noise

This section discusses the characteristics of sound, the existing noise levels in Tulare County, and the proposed Program noise levels resulting from both existing and projected new or expanding dairy and other bovine facilities construction and operation activities.

IMPACT EVALUATION CRITERIA

CEQA criteria for noise impacts are determined by evaluating whether the project would result in:

- a) *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinances, or applicable standards of other agencies?*
- b) *Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?*
- c) *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*
- d) *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*
- e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*
- f) *For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

Generally, noise is considered unwanted sound.¹ Sound levels are measured in decibels (*dB*). However, in order to reflect the decreased sensitivity of the human ear to certain low and extremely high frequencies, sound frequencies are measured using a weighting system called ‘A’ weighting. Sound levels measured in this way are expressed in terms of *dba*.

Ambient noise levels are typically dynamic due to passing automobiles, airplanes, barking dogs, etc., but can also be static during any given time period. The Day-Night Average Sound Level (*Ldn*) is the average equivalent sound level during a 24-hour period, obtained after the addition of ten decibels to sound levels occurring between 10 p.m. and 7 a.m. The term Equivalent Sound Level (*Leq*) is often used to express the average A-weighted sound level during a specific period of time. Decibels and other technical terms are defined in Table 3.11-1.

The effects of noise on people can be placed into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, learning; and
- Physiological effects such as hearing loss or sudden startling.

**Table 3.11-1
Acoustical Terminology²**

Term	Definition
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
L ₀₁ , L ₁₀ , L ₅₀ , L ₉₀	The A-weighted noise levels that are exceeded 1%, 100%, 50% and 90% of the time during the measurement period.
Equivalent Sound Level, Leq	The sound level containing the same total energy as a time varying signal over a given sample period. Leq is typically computed over 1, 8, and 24-hour sample periods.
Community Noise Equivalent Level, CNEL	The average equivalent sound level during a 24-hour day, obtained after addition of approximately 5 decibels to sound levels in the evening from 7 p.m. to 10 p.m. and 10 decibels to sound levels in the night before 7 a.m. and after 10 p.m.
Day/Night Average Sound Level, Ldn	The average equivalent sound level during a 24-hour day, obtained after addition of 10 decibels to sound levels in the night after 10 p.m. and before 7 a.m.
Lmax, Lmn	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.
Intrusive	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Environmental noise typically produces effects in the first two categories. Within those categories, individual thresholds of annoyance vary widely, and different tolerances to noise tend to develop, based on an individual's past experiences with noise. There are no universal noise level thresholds that correspond to specific levels of annoyance and dissatisfaction.

However, an important factor in predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called "ambient noise" level. In general, the more a new noise exceeds the previous ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 *dBA* cannot be perceived;
- Outside the laboratory, a 3 *dBA* change is considered a "just-noticeable" difference;

- A change in level of at least 5 *dBA* is required before a change in human response would be expected; and
- A 10 *dBA* change is subjectively heard as approximately a doubling in loudness and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system used to describe sound. As the human ear perceives sound in a non-linear fashion; the decibel scale was developed based on logarithms to accurately characterize human sound perception. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 *dBA*, the combined sound level would be 53 *dBA*, not 100 *dBA*.

REGULATORY SETTING

The following environmental and regulatory settings were developed from information contained in the Tulare County General Plan 2010 Background Report³ and summarized below.

Federal Regulations

United States Environmental Protection Agency

The U.S. *EPA* has identified the relationship between noise levels and human response. The *EPA* has determined that over a 24-hour period, an *Leq* of 70 *dBA* will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at an *Leq* of 55 *dBA* and interior levels at or below 45 *dBA*. Although these levels are relevant for planning and design and useful for informational purposes, they are not land use planning criteria because they do not consider economic cost, technical feasibility, or the needs of the community.

The *EPA* has set 55 *dBA Ldn* as the basic goal for residential environments. However, other federal agencies, in consideration of their own program requirements and goals, as well as the difficulty of actually achieving a goal of 55 *dBA Ldn*, have generally agreed on the 65 *dBA Ldn* level as being appropriate for residential uses. At 65 *dBA Ldn* activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

State Regulations

Governor's Office of Planning and Research

The Governor's Office of Planning and Research (*OPR*) has developed guidelines for the preparation of general plans.⁴ These include land use compatibility guidelines for noise exposure.

In California, cities and counties are required to adopt a noise element as part of their General Plans. The purpose of noise elements is to establish a land use pattern that minimizes the exposure of residents of the community to excessive noise. The State of California General Plan Guidelines, published by the Governor's Office of Planning and Research, defines land-use

compatibility guideline criteria for noise exposure. These criteria are the basis for most land-use compatibility criteria used by cities and counties.

Local Regulations

The Tulare County General Plan references Table 3.11-2 as showing the sensitivity of different land uses to their noise environment. General Plan Policy HS-8.8 governs development of new industrial, commercial, or other noise generating and uses at the boundary of areas designated and zoned for residential or other noise-sensitive uses, unless variance therefrom is determined to be necessary to promote the public health, safety and welfare of the County. Policy HS-8.11 provides that the County shall limit noise generating activities, such as construction, to hours of normal business operation (7 a.m. to 7 p.m.).

**Table 3.11-2
County of Tulare Noise Element
Land Use Compatibility for Community Noise Environments⁵**

Land Use Category	Community Noise Exposure, <i>Ldn</i> or <i>CNEL dB</i>			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low density single family, duplex, mobile homes	<60 (<45 Interior)	55 to 70	70 to 75	>75 (>45 Interior)
Residential – Multiple family	<65 (<45 Interior)	60 to 70	70 to 75	>75 (>45 Interior)
Schools, libraries, churches, hospitals, nursing homes	<70	60 to 70	70 to 80	>80
Industrial, manufacturing, utilities, agriculture	<75	70 to 80	75 to 85	No levels identified

Interpretation:

Normally acceptable – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally acceptable – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally unacceptable – New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly unacceptable – New construction or development should generally not be undertaken.

Source: Tulare County 2030 General Plan, Chapter 10, Section 10.8 - Noise

ENVIRONMENTAL SETTING

Existing Ambient Noise Levels

Existing ambient noise levels within Tulare County rural agricultural areas are low, with noise sources limited to agricultural operations and nearby traffic noises. Below are descriptions of those noise sources that contribute to the existing ambient noise levels in those areas.

Traffic Noise

Roadways and traffic noise are the dominant source of ambient noise in the County. The noise levels generated from vehicles using roads within the County is primarily the product of the number of vehicles, type of vehicles (mix of automobiles, trucks, and other large vehicles), and speed.

Railroad Operations Noise

Tulare County railroad operations consist of high speed mainline operations on the Burlington Northern-Santa Fe Railroad (formerly Atchison, Topeka and Santa Fe) in the southwest corner of the County and on the Union Pacific Railroad (formerly Southern Pacific Transportation Company) along State Route (SR) 99. Lower speeds occur on various branch lines located throughout the County on the San Joaquin Valley Railroad.

Stationary Noise Sources

Stationary noise sources in Tulare County include manufacturing operations, sand and gravel mining, and agricultural operations. The following description of agricultural noise sources in Tulare County is intended to be representative of only one of the primary stationary noise sources found within the County.

Agricultural Operations

Farming operations are common throughout Tulare County with the exception of some mountainous areas and heavily developed areas within larger communities. Some of the more common noise sources associated with farming operations include tractors, harvesting equipment and spray equipment.

Although farming operations occasionally generate significant noise levels, such levels generally do not last more than a few hours at a given location unless a stationary piece of equipment such as a pump motor (or engine) is involved. For this reason, significant cumulative noise exposure as defined by *Ldn* would not generally be expected to result from typical farming operations within Tulare County. Other noise sources associated with agricultural operations include:

- Wind machines;
- Diesel engines on wells;
- Crop dusters; and
- Truck traffic.

IMPACTS

Impact #3.11.1 - Construction Noise, Groundborne Vibration: [Evaluation Criteria (a), (b), (d)]

Construction of dairy facilities includes various structures (e.g., freestall barns, a manure management system, milking barn, etc.) and installation of utilities and paving. Also, certain Draft Dairy CAP GHG reduction measures listed in Section 3.0 would also require construction. The noise impact associated with these construction activities depends on the equipment used and the distance from the noise source to a receptor.

Typical construction equipment includes scrapers, backhoes, and miscellaneous equipment (e.g., pneumatic tools, generators and portable air compressors). Noise levels generated by this type of construction equipment at various distances from the noise source are shown in Table 3.11-3.

**Table 3.11-3
Estimated Noise Levels⁶**

Type of Equipment	Range of Sound Levels Measures (dBA of 50 feet)	Suggested Sound Levels for Analysis (dBA of 50 feet)
Pile Drivers, 12,000 to 18,000 ft - lb/blow	81 to 96	93
Rock Drills	83 to 99	96
Jack Hammers	75 to 85	82
Pneumatic Tools	78 to 88	85
Pumps	68 to 80	77
Dozers	85 to 90	88
Tractor	77 to 82	80
Front-End Loaders	86 to 90	88
Hydraulic Backhoe	81 to 90	86
Hydraulic Excavators	81 to 90	86
Graders	79 to 89	86
Air Compressors	76 to 86	86
Trucks	81 to 87	86

Noise levels generated by the equipment would range from 77 to 88 dBA at a distance of 50 feet from the noise sources. Noise levels generated from construction activities decrease with increasing distance from the noise source; generally, noise levels reduce by six decibels for every doubling of distance from the source. Per the County General Plan Update (Policy HS-8.11), construction noise would be limited to normal hours of business operation, 7 am-7 pm.

Short-term construction noise levels at a nearest receptor could be, cumulatively, approximately 78 dBA. [88 dBA - (3.33 x 6) = 78, based on 6 dBA reduction for each doubling of distance to nearest receptor at ¼ mile distance.] Although this is 3 dBA above the "normally acceptable" noise exposure in an agricultural area (per Table 3.11-2), this level is "conditionally acceptable" in agricultural areas (per Table 3.11-2). Therefore, increases in ambient noise levels associated with construction would not be significant.

No groundborne vibrations or groundborne noise are generated during dairy construction activities as building foundations for dairy structures are slab-on-grade, in which the weight of the building is transferred to the soil through a concrete slab placed at the surface. Deep footings including impact driven piles or drilled shafts are not required.

Conclusion: Construction activities associated with the proposed Program would not cause a significant temporary increase in noise levels, exceed local construction noise standards, or result in excessive ground borne vibration or noise. The proposed Program impacts are *less than significant*.

Mitigation Measures: None are required.

Impact #3.11.2 - Operational Noise:
[Evaluation Criteria (a),(c)]

Impacts on Employees. Noise sources that are typical of dairies include the milking area, milk house vacuum pump and milk cooling compressor. A 2006 study by Louhelainen et al., (2006) studied milk house noise and the results showed “...that the noise values were 75 dB during milking, 72-77 dB, (mean, range); during cattle tending work; 77 dB, 73-79; during tractor or loader driving 85 dB, 78-90. The highest noise levels were from the milking machine compressor (87-93 dB), and the tractor and loader (77-100 dB). The noise level during pressure cleaning was 79-95 dB, and the noise level of ventilation fans was 64-72 dB. The highest noise levels were measured from the milking machine compressor (87-93 dB), and the tractor and loader (77-100 dB). The noise level during pressure cleaning was 79-95 dB, and the noise level of ventilation fans was 64-72 dB.”⁷ The paper also recommended: “Hearing protectors should be worn especially during pressure cleaning and when driving a loader.”⁸

For employees working within the dairy facilities, the California Occupation Safety and Health Administration (*CalOSHA*) has established hearing protection standards. Although noise levels within the milking barn could potentially be between 72 *dba* and 100 *dba*, the enclosed building will reduce noise levels for receptors within the project vicinity, and *CalOSHA* requires employers to provide hearing protection and training in its proper use (and in a language understood by the employee).

Noise generated outside the dairy facilities would be from tractors distributing feed and cleaning troughs and corrals. As shown in Table 3.11-3 the typical noise levels (*dba*) range between 79-82 *dB* at a distance of 50 feet from where the tractors are operating. Employees within a building would not be impacted by tractor operation. Operators of these tractors will be required by *CalOSHA* to wear appropriate equipment, which includes hearing protection, in order to reduce noise to acceptable levels. Compliance with *CalOSHA* requirements would provide appropriate protection for all employees from noise impacts.

Impacts on Adjacent Properties. Goal 2.2 and Policies 2.2 through 2.6 of the proposed Program require that new facilities or expansion of existing facilities must be compatible with surrounding land uses. The Plan contains multiple policies that require buffering distances in order to ensure that the facilities being established or being expanded are compatible with

adjacent uses which include, but are not limited to, residential, schools, and other urban areas, both incorporated and unincorporated. The minimum setback distance that is established by this Plan is 1,000 feet from public parks and one-half mile (2,640 feet) from residential, other agricultural uses, and urban areas. These setbacks, as well as adherence to the operational requirements of *CalOSHA*, would assure that noise impacts of operations on sensitive receptors would be within acceptable or conditionally acceptable levels shown in Table 3.11-2, and thus less than significant.

Traffic Noise Impacts. Section 3.14 presents projections of additional average daily traffic associated with the proposed Program.

Noise levels for trucks are 82 *dba* at a distance of 100 ft. Because noise is measured on a logarithmic scale 82 *dba* plus 82 *dba* does not equal 164 *dba*. Two sources of equal noise added together result in an increase of 3 *dba*. That is 82 *dba* plus 82 *dba* results in a total noise level of 85 *dba*. Therefore, doubling traffic volumes will increase noise levels by only 3 *dba*.⁹ A 3 *dba* change in traffic noise levels is not typically perceived by persons with average hearing, although some people detect a change in noise levels between 3 *dba* and 5 *dba*. However, 85 *dba* would exceed all applicable thresholds listed as conditionally acceptable (Table 3.11-2) within the General Plan.

Although this change is not typically able to be detected by the average person, the additional traffic would exceed thresholds established within the General Plan. Traffic impacts analyzed in the General Plan *EIR* were found to be above the standards identified as acceptable and significant. General Plan noise mitigation measures, which as applicable would apply to expanded and new dairy and other bovine facilities, reduced the traffic noise impact, but not to less than significant levels; the General Plan's traffic noise impact was therefore considered significant and unavoidable. The traffic noise impacts generated by the proposed Program would be similar to traffic noise impacts identified in the General Plan *EIR*, and would therefore also be considered significant and unavoidable.

Please note that although General Plan noise thresholds would be exceeded, the absolute noise level increase from traffic generated by new or expanded facilities would not be a "substantial increase," as defined by the California Department of Transportation, and accepted by the Federal Highway Administration, as an increase of 12 *dba* or more.¹⁰ Therefore, traffic generated by the Program would not cause a substantial increase in noise levels.

Conclusion: Although operational activities (traffic) associated with the proposed Program would not cause a substantial increase in noise levels, they would create local operational noise impacts exceeding thresholds defined by the General Plan. Therefore, the operational noise impacts from the proposed Program are *significant*.

Mitigation Measure #3.11.2: There are no additional feasible traffic noise mitigation measures other than those identified in the General Plan *EIR*.

Significance after Mitigation: Because local operational noise impacts would exceed thresholds defined by the General Plan even after implementation of applicable General Plan *EIR* traffic

noise mitigation measures, the proposed Program's operational noise impacts would be *significant and unavoidable*.

Impact #3.11.3 - Exposure to Airport Noise:
[Evaluation Criteria (e),(f)]

The 60 *dba* contour for annual average operations at most Tulare County airports is located relatively close to the runway due to relatively low numbers of operations and an aircraft fleet consisting primarily of smaller propeller aircraft. However, it should be noted that maximum noise levels from individual operations by high performance single and twin engine aircraft, fire suppression aircraft and some corporate jets may be expected to result in significant short term noise impacts for persons located near the approach, departure or local training patterns of an airport.¹¹

Agricultural spraying and planting are intermittent and of relatively short duration and therefore, are not major noise generators. Therefore, the Program would not expose workers at existing facilities to significant noise impacts from these operations.

The closest existing dairy or other bovine facility at which expansion would be possible is approximately 3,500 feet from an airport (Mefford Field Airport). This provides for adequate distance to diffuse any aircraft noise impact. New facilities established pursuant to this Program would only be allowed in areas that provide adequate distances that would minimize the noise impacts generated by airport operations.

Further assuring less than significant airport noise impacts as a result of buffering distance requirements, dairies and other bovine facilities are prohibited by the Federal Aviation Agency in Safety Zones 1 and 5. Zone 1 is a trapezoidal area located immediately off each end of a runway. Zone 5 encompasses close-in areas lateral to the runway. These areas are typically within the airport property.

No expanded or new dairy or other bovine facilities are permitted in Safety Zones 1 or 5, under the Comprehensive Airport Land Use Plan.

Conclusion: Because the proposed Program would not expose workers or residents to excessive noise levels from public airports or private airstrips, the proposed Program impacts are *less than significant*.

Mitigation Measures: None are required.

REFERENCES

¹ County of Tulare. 2010. General Plan Background Report page 8-45. Tulare County, CA.
<http://generalplan.co.tulare.ca.us>

² County of Tulare. 2010, General Plan Background Report page 8-46 through 8-47. Tulare County, CA.
<http://generalplan.co.tulare.ca.us>

³ Tulare County. 2010. General Plan Background Report. <http://generalplan.co.tulare.ca.us>

⁴ State of California, Governor’s Office of Planning and Research. 2003. State of California General Plan Guidelines, October 2003.

⁵ Tulare County Planning and Development Department. 1988. Policy Document: Noise Element of the General Plan. Prepared by the Tulare County Planning and Development Department, with Brown-Bunting Associates, Inc. and Quad Consultants. Approved January 13, 1988, Adopted February 9, 1988.

⁶ Ibid

⁷ Kyosti Louhelainen, Esko Rytönen, and Outi Lankia. 2006. “Noise Exposure in Cow Houses- Hazard to Farmers and to Animals?” American Society of Agricultural and Biological Engineers, paper number 065021 of the 2006 ASAE Annual Meeting.

https://www.researchgate.net/publication/271421227_Noise_Exposure_in_Cow_House_Hazard_to_Farmers_and_to_Animals

⁸ Ibid.

⁹ Illinois Department of Transportation. Highway Traffic Noise- FUNDAMENTALS. Available:

<http://www.dot.state.il.us/desenv/noise/part1.html>. Site Accessed: 2/10/2012.

¹⁰ Caltrans 2015. Standard Environmental Reference, Chapter 12 (Noise). Available at

<http://www.dot.ca.gov/ser/vol1/sec3/physical/ch12noise/chap12noise.htm#whendoes> Accessed January 16, 2015

¹¹ Tulare County Planning and Development Department. 2010. Background Report – Tulare County General Plan. Prepared by the Tulare County Planning and Development Department, with Environmental Science Associates. Adopted August 28, 2012. <http://generalplan.co.tulare.ca.us>

3.12 Public and Utility Services

INTRODUCTION

Development of private land can have an impact on public services and utilities. This section describes the anticipated impacts that occur as a result of Program-related construction and operation of dairies and other bovine facilities.

IMPACT EVALUATION CRITERIA

CEQA evaluation criteria for public or utility service impacts are determined by evaluating whether the project would:

- a) *Result in substantial adverse physical impacts associated with the provision of new or physically altered government and public service facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:*
 - *Fire protection;*
 - *Police protection;*
 - *Schools;*
 - *Parks;*
 - *Electrical power or natural gas;*
 - *Communication; and*
 - *Other public or utility services?*
- b) *Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?*
- c) *Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*
- d) *Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*
- e) *Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?*
- f) *Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*
- g) *Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?*

h) Comply with federal, state, and local statutes and regulations related to solid waste?

REGULATORY SETTING

The following environmental and regulatory settings were summarized, in part, from information contained in the Tulare County General Plan 2010 Background Report.¹

Federal Regulations

National Fire Protection Association

The National Fire Protection Association (*NFPA*) is an international nonprofit organization that provides consensus codes and standards, research, training, and education on fire prevention and public safety. The *NFPA* develops, publishes, and disseminates more than 30 consensus codes and standards intended to minimize the possibility and effects of fire and other risks.² The *NFPA* publishes the *NFPA 1, Uniform Fire Code*, which provides requirements to establish a reasonable level of fire safety and property protection in new and existing buildings.

United States Environmental Protection Agency (EPA)

See Section 3.9 Regulatory Setting.

State Regulations

California Fire Code and Building Code

The 2007 California Fire Code (Title 24, Part 9 of the California Code of Regulations) establishes regulations to safeguard against hazards of fire, explosion or dangerous conditions in new and existing buildings, structures, and premises. The Fire Code also establishes requirements intended to provide safety and assistance to fire fighters and emergency responders during emergency operations. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure throughout the State of California.³ The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas.

The California Building Code also contains regulations to safeguard against fire hazards, including requirements for sprinkler systems, fire alarms, and fire resistant building materials.

Central Valley Regional Water Quality Control Board

See Section 3.9 Regulatory Setting.

Resources Recycling and Recovery

The California Department of Resources Recycling and Recovery (*CalRecycle*), formerly the California Integrated Waste Management Board, works in partnership with local government, industry, and the public to reduce waste disposal and ensure environmentally safe landfills. Its regulatory responsibilities include active landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

Local Regulations

Fire Construction Standards

The County of Tulare established the Fire-Safe Regulations and Road Standards (Ordinance No. 542), which contains requirements for signage and building addresses, zoning, water, parcel maps, the subdivision ordinance, and road standards to comply with Public Resources Code Section 4290. The ordinance includes the following requirements, which are implemented by the Tulare County Resource Management Agency and the Tulare County Fire Department during plan review of new projects:

- Emergency access shall be ensured by minimum 18-foot road widths with surfaces accommodating conventional vehicles and 40,000-pound loads, grades not exceeding 16 percent, curve radii of at least 50 feet, dead ends meeting maximum length requirements with turnouts and turnarounds, and roadway structures and gate entrances that do not obstruct clear passage of authorized vehicles;
- Signing and building numbering shall facilitate locating a fire and avoiding delays in response time by being sufficiently visible, non-duplicative, and indicative of location and any traffic access limitations;
- Emergency water sources shall be available and accessible in adequate quantities to combat wildfire with labeled hydrants meeting uniform specifications; and
- Fuel modification shall be practiced to reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation adjacent to structures and in the general vicinity of development.

The County of Tulare Board of Supervisors amended the County of Tulare Zoning Ordinance No. 352 with the adoption of Ordinance No. 2982 (effective January 2, 1992), adding Section 2 to address fire safety and road requirements in State Responsibility Areas.

ENVIRONMENTAL SETTING

Fire Protection Setting

Since July 1, 2007, Tulare County fire protection has been provided by the Tulare County Fire Department. The Tulare County Fire Department's Capital Improvement Plan addresses current and future fire protection needs in the County, establishes priorities, sets level of service

standards based on jurisdictional land uses, and establishes a long-range plan for fire prevention and protection activities. The Tulare County Fire Department is currently preparing an updated Capital Improvement Plan that will be presented to the County of Tulare Board of Supervisors for approval. The Fire Department plans to update the *CIP* every three to five years.

The Tulare County Fire Department has 28 stations that are located throughout the County within its most densely populated areas and currently maintains minimal staffing to meet the requirements set forth under *NFPA* 1720-1721 for a rural area. These requirements consist of one full-time person per station per shift with other paid on-call firefighters. This level of staffing has the potential to result in an elevated fire loss value during some emergency conditions when compared with other agencies that have supplemental support staff.⁴

Water and Wastewater Institutional Setting

Potable (drinking) water and wastewater facilities in Tulare County are operated and managed by a variety of public districts and private water companies. Public districts include water districts, community service districts, irrigation districts, and public utility districts which are organized under various state legislative acts. While largely self-governing, they are subject to federal and state drinking water and water quality laws as discussed above. By comparison, mutual water companies are privately owned and operated, and although subject to many governmental regulations, they are subject to less governmental review and coordination.

Although water districts and water companies are not directly under the jurisdiction of the County of Tulare, the County must coordinate its plans for growth and development with these entities to assure that services can be provided on a timely basis to areas planned for growth. This is accomplished, in part, through the County Local Agency Formation Commission.

Water Supply Setting

Appendix G to this is *EIR* is a Programmatic Water Supply Evaluation Technical Memorandum which presents details on the water supply setting and water supply impacts of the proposed Program. Information in this appendix is summarized and analyzed in Section 3.9, Hydrology/Water Quality. Individual dairy and other bovine facilities will be supplied with onsite wells or, in some cases, with surface water available from water rights appurtenant to the project site, for feed crop irrigation supplemental to dairy lagoon effluent.

The County's groundwater supplies are discussed in Section 3.9. Groundwater is extracted from the underlying Kings, Kaweah, and Tule subbasins, as defined by *DWR*.

Surface water supplies are diverted from local streams and rivers by several different local water purveyors and imported to the County through federal Central Valley Project ("*CVP*") contracts. The *CVP* water supplies are provided through the Friant Division, with primary supplies derived from the San Joaquin River. However, through a complex series of conveyance and exchange agreements, water is also "imported" via the Cross Valley Canal where water originates from the Sacramento River.

Solid Waste Setting

The County of Tulare operates three active solid waste disposal facilities (landfills): Visalia, Woodville, and Teapot Dome. These landfills serve all of Tulare County as well as parts of surrounding counties. Total transport of solid waste to these landfills was estimated (in the Tulare County General Plan) to be 430,000 tons per year in 2006.⁵ The General Plan estimated 2030 transport to these three landfills to be 519,000 tons per year in 2030. A small amount of solid waste from Tulare County is transported to surrounding county landfills. Tulare County landfills accept building materials, green waste, and tires for recycling purposes, in addition to domestic and industrial solid waste.

IMPACTS

Impact #3.12.1 - Public Services Facilities: [Evaluation Criteria (a)]

Any increased water usage may adversely affect groundwater levels by reducing fire hydrant flows. With an estimated 20 to 25% increase in feed storage at new or expanding dairy facilities, additional water usage will be required. Depending on the location of new dairy facilities there may be a need to redistribute water tenders (i.e., tankers), and new fire station construction may be required.⁵ Impacts of any new fire construction are speculative at the Program *EIR* level, and would be addressed and mitigated in project-specific *CEQA* documents.

Dairy construction and operation may result in the need for additional environmental or health officers, building and zoning inspectors, animal control staff, and planning staff. It is anticipated that employment in these positions would continue as the updated *ACFP* is implemented and additional dairy or bovine industry facilities are constructed. New or expanded government facilities would not be required specifically to provide office space for any additional staff.

The minimal population growth associated the proposed Program (see Section 3.10) would generate minimal additional school enrollments. Any potentially affected school district has the authority to mitigate increased student enrollment impacts through the imposition of school impact fees from residential structures and milk barns (other dairy/bovine facilities are exempt from such fees as they do not generate students).

Conclusion: Because the proposed Program would not result in substantial physical impacts associated with new or expanded public services facilities, the proposed Program impacts are *less than significant*.

Mitigation Measures: None are required.

Impact #3.12.2 - Exceedance of Regional Water Quality Control Board Wastewater Requirements; New Wastewater Facilities:
[Evaluation Criteria (b) (c)]

Impacts associated with Regional Water Quality Control Board (RWQCB) wastewater requirements are discussed in Section 3.9 Hydrology/Water Quality. Please see Impact #3.9.1.

Impact #3.12.3 - Storm Water Drainage:
[Evaluation Criteria (d)]

Potential storm water facility impacts and control measures are discussed in Section 3.9 Hydrology/Water Quality. Please see Impacts # 3.9.3 and 3.9.4.

Impact #3.12.4 - Sufficient Water Supplies; New Water Treatment Facilities:
[Evaluation Criteria (c) (e)]

Please see Section 3.9, Hydrology/Water Quality. Please see Impact #3.9.2.

Impact #3.12.5 - Wastewater Treatment Provider Capacity:
[Evaluation Criteria (f)]

Dairies and other bovine facilities would not be served by community wastewater treatment facilities.

Conclusion: Because the proposed Program would not be served by community wastewater treatment facilities, it would result in *no impacts*.

Mitigation Measures: None are required.

Impact #3.12.6 - Solid Waste:
[Evaluation Criteria (g), (h)]

Tulare County landfills would be able to accommodate the small amount of solid waste that is generated from dairies and other bovine facilities. Such solid waste would typically average no more than three to six cubic yards per week for each dairy or bovine facility.⁶ Such waste generation and transport would by 2023 be approximately 6,800 tons per year, less than 1 ½ percent of total solid waste transported to the Counties facilities. Dairies and other bovine facilities would not conflict with federal, state, or local regulations related to solid waste.

It should be noted that Dairy CAP GHG reduction measures R6 recycling and non-manure composting services) and R9 (recycle demolished construction material) would reduce the amount of solid waste requiring disposal.

Conclusion: Because the proposed Program would be served by landfills with sufficient capacity to accommodate the Proposed Program's solid waste disposal needs, and because it

would not conflict with solid waste regulations, the proposed Program impacts are *less than significant*.

Mitigation Measures: None are required.

REFERENCES

¹ County of Tulare. 2010. General Plan Background Report. <http://generalplan.co.tulare.ca.us/>

² National Fire Protection Association. 2012. About NFPA. Site Accessible:
<http://www.nfpa.org/categoryList.asp?categoryID=143&URL=About%20NFPA&cookie%5Ftest=1>.

³ California Green Building Standards Code. 2008. Effective August 1, 2009. Page 3.
http://www.ecodes.biz/ecodes_support/Free_Resources/2013California/13Green/13Green_main.html

⁴ Tulare County Fire Department, Personal Communications with Charlie Norman, Division Chief. July 31, 2014.

⁵ Tulare County General Plan, page 3.9-21 <http://generalplan.co.tulare.ca.us/>

⁶ Tule Trash Company, Personal Communication with Richard Gress, owner. July 2, 2014.

3.13 Recreation

INTRODUCTION

This section evaluates potential impacts the proposed Program may have on existing or proposed recreational facilities.

IMPACT EVALUATION CRITERIA

CEQA evaluation criteria for recreation impacts are:

- a) *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*
- b) *Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?*

REGULATORY SETTING

There are no federal or state or local recreation-related regulations relevant to the proposed Program. The Tulare County General Plan Environmental Resources Management Element and Public Facilities and Services Element include several policies that encourage provision of adequate recreational facilities.

ENVIRONMENTAL SETTING

The following environmental setting was, in part, summarized from information contained in the Tulare County General Plan 2010 Background Report.¹

County and City Parks

There are 13 park and recreation facilities occupying nearly 700 acres that are owned and operated by the County of Tulare.² In addition, each incorporated city within the County maintains and operates municipal park and recreation facilities which serve the County's total population, including dairy industry employees.

State Parks and Forests

The only State Park in Tulare County is Colonel Allensworth State Historic Park. The park contains a museum and a visitor center memorializing the town's history, as well as camping facilities.¹ Also, the Mountain Home State Forest recreational area is managed by the California Department of Forestry and Fire Protection. This state forest area consists of over 4,800 acres of parkland containing a number of Giant Sequoias, and is located just east of Porterville.

Federal Recreation Areas

In addition to Kings Canyon and Sequoia National Parks, the two federal recreational areas in Tulare County are Lake Kaweah and Lake Success which are operated by the U.S. Army Corps

of Engineers.¹ Lake Kaweah offers many recreational opportunities including fishing, camping, and boating. The lake and recreation area is located approximately 20 miles east of Visalia on SR 198 and was constructed by the U.S. Army Corps of Engineers for flood control and water conservation purposes. Lake Success offers many recreational activities including fishing, boating, waterskiing, camping, and picnicking. Seasonal hunting is permitted in the Lake-adjacent 1,400-acre Wildlife Management Area. The reservoir was constructed by the U.S. Army Corps of Engineers for flood control and irrigation purposes and is located approximately eight miles east of Porterville in the Sierra Nevada foothills area.

IMPACTS

Impact #3.13.1 - Recreational Facilities: [Evaluation Criteria (a), (b)]

As discussed in Impact #3.10.4, new jobs associated with dairy and feedlot growth would largely be filled by existing County residents, rather than by employees relocated from outside the County. Therefore, there would be only minor increases in demand for recreational facilities associated with the proposed Program. Also, the proposed Program does not include or require construction of recreational facilities that could cause adverse environmental impacts.

Conclusion: Because the proposed Program would not increase the use of parks and recreational facilities in a manner causing substantial physical deterioration, or include or require construction of recreational facilities that could cause adverse environmental impacts, the impact from the proposed Program is *less than significant*.

Mitigation Measures: None are required.

REFERENCES

¹ Tulare County. 2010. General Plan Background Report. <http://generalplan.co.tulare.ca.us>

² County of Tulare. 2010. General Plan Background Report. Page 4-3. Tulare County, CA. <http://generalplan.co.tulare.ca.us>

3.14 Transportation/Traffic

INTRODUCTION

This section describes transportation and circulation conditions in Tulare County and provides an evaluation of the proposed Program's impacts on the transportation system. The regulatory setting section includes a description of applicable State and local regulatory policies and criteria for evaluating potential impacts associated with the proposed Program. A description of the impacts of the Program is also provided as is the identification of feasible mitigation to avoid or lessen the impacts.

IMPACT EVALUATION CRITERIA

CEQA Guidelines criteria for evaluating transportation and traffic impacts are:

Would the project:

- a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?*
- b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management City for designated roads or highways?¹*
- c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*
- d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*
- e) Result in inadequate emergency access?*
- f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?*
- g) Substantially accelerate physical deterioration of public and/or private roads?*

REGULATORY SETTING

The following environmental and regulatory settings were summarized, in part, from information contained in the Tulare County General Plan 2010 Background Report.

There are no State or federal traffic and circulation regulations relevant to the proposed Program.

Local Regulations

Regional Transportation Plan

The Regional Transportation Plan and Sustainable Communities Strategy (*RTP/SCS*) is a multi-modal, long-range planning document adopted by the Tulare County Association of Governments (*TCAG*). The most recent *RTP/SCS*² was adopted in 2014, and covers the years 2014-2040. The *RTP* includes programs and policies for congestion management, transit, bicycles and pedestrians, roadways, freight, and constrained financing. It also includes an *SCS* that complies with *SB 375* requirements. The *RTP* is updated every four years to address a 20-year projection of needs. Each agency responsible for building and managing transportation facilities, including the County of Tulare, has implementation responsibilities under the *RTP*.

Congestion Management Program³

With the 2010 Census, the population of the Visalia/Tulare urbanized area surpassed the 200,000 mark, triggering the additional planning requirements for Transportation Management Area (*TMA*s) as set-out by federal transportation planning law (*MAP-21*) and regulations (*23 CFR 450.316*). The primary additional planning process requirement for *TMA*s is the creation of Congestion Management Plan (*CMP*) to monitor and manage congestion on the regional transportation network. *TCAG* is currently preparing but has not yet adopted a *CMP*.

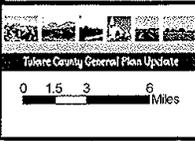
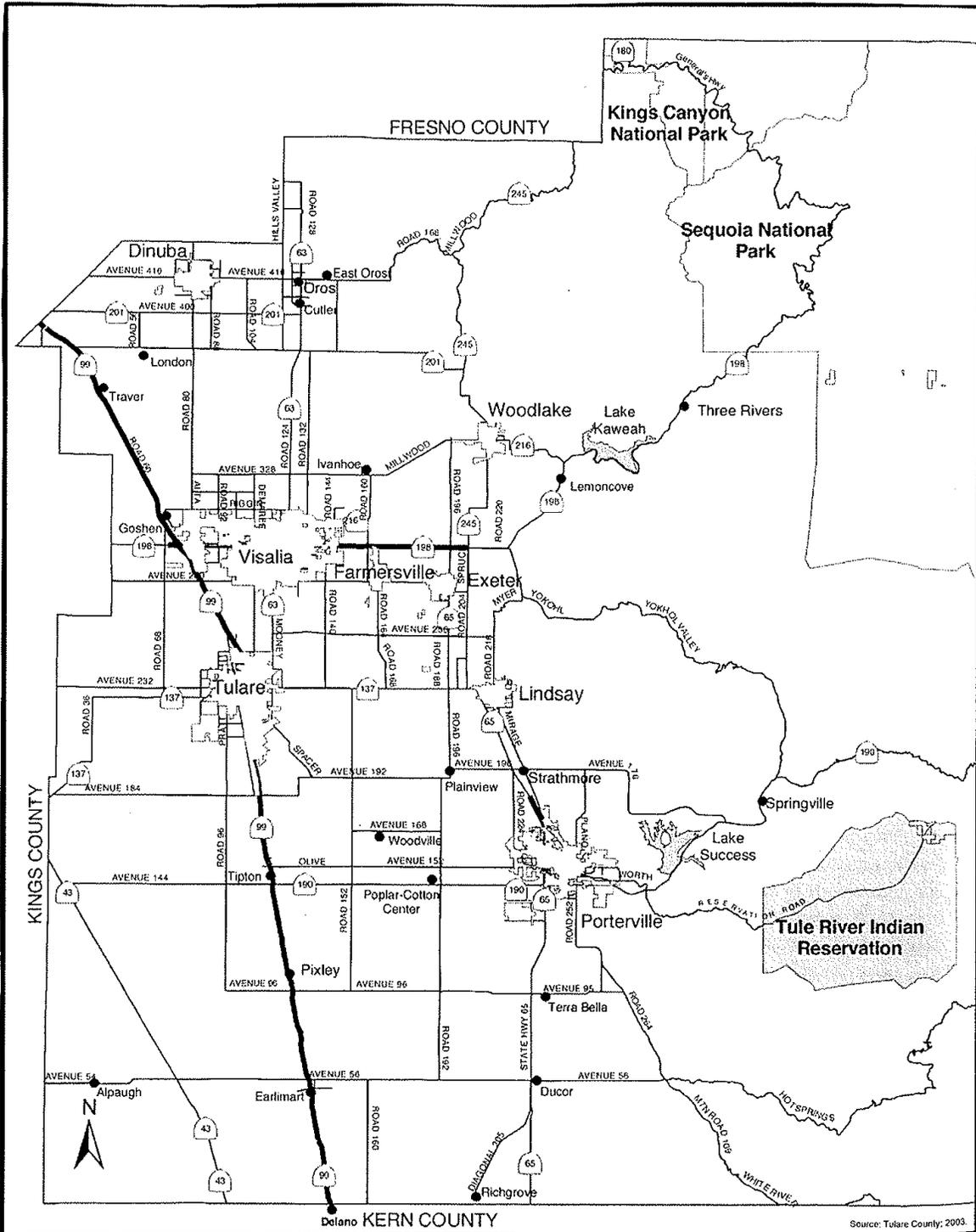
Local Transportation Funding

In Tulare County, a sales tax measure (Measure “R”) generates an estimated \$650 million (over the course of 30 years), to supplement Federal and State gas tax/transportation funding and grants, local transportation improvements within the County and its cities. It provides funds for projects which are identified in the *RTP* and provides funds for interchange construction and road maintenance.

Another means of collecting revenue for local streets and roads is through impact and developer fees. Each of the cities and the County of Tulare has the authority to enact and collect these fees in order to provide improvements to the transportation network. The cities in the County have done so. The County of Tulare has considered creating a traffic impact fee for improvements on County roadway facilities.¹ If such a fee were adopted, it would likely exempt construction and expansion of dairies and other bovine facilities, the mitigation of impacts therefrom being separately funded.

ENVIRONMENTAL SETTING

This section contains an overview of the traffic and roadway transportation facilities in Tulare County.⁴ (See Figure 3.14-1).



- Freeways
- Major Roads
- State Highway
- Lakes
- County Boundary
- National Parks
- Tule River Indian Reservation
- City Limits
- Unincorporated Communities

Source: Tulare County, 2003.
FIGURE 5-1
Regional Roadway Network



TULARE COUNTY ROADWAY NETWORK

Figure 3.14 - 1

The County Road System

The County of Tulare maintains approximately 3,000 miles of surfaced roadway. Maintained roadways include a range of facilities from two-lane, no shoulder, local service routes through four-lane expressways.

Funding for County roadway maintenance has been a challenge. Like many jurisdictions throughout California, it has been difficult for the County to keep pace with required surfacing needs. This has particularly affected low-traffic-volume minor, local service, facilities which may not have been constructed with modern, engineered, pavement cross-sections.

Fees generated through a traffic impact fee would primarily benefit major roadways and routes; funding availability may allow the diversion of some existing transportation/traffic funding to the maintenance of local-service roadways. Such fees would not apply to dairies and other bovine facilities or other agricultural operations.

State Highways

State Route 99

Currently, State Route 99 through Tulare County is a 4 to 6 lane divided freeway. The County is linked to Fresno County and Kern County principally by SR 99. This route provides the only continuous north/south route through the County and is heavily used for regional and inter-regional travel. The City of Tulare, western Visalia, and the communities of Earlimart, Tevison, Pixley, Tipton, Goshen, and Traver contain or are located immediately adjacent to SR 99 and are directly impacted by this facility.

State Routes 65 and 198

The two other freeway segments in Tulare County are SR 65 in Porterville and SR 198 in Visalia. SR 65 in Porterville is constructed to freeway standards from just south of SR 190 to just north of Henderson Avenue. SR 65 also provides a connection to Bakersfield for south County residents in the Strathmore, Terra Bella, Ducor, Porterville, and Lindsay areas.

The segment of SR 198 that is constructed to freeway standards is between SR 99 and Road 180. Continuing west into Kings County, SR 198 is a divided 4-lane expressway and links the City of Visalia and community of Goshen in Tulare County to the Cities of Hanford and Lemoore in Kings County, and beyond to Interstate 5. To the east of the City of Visalia, SR 198 provides direct access to the unincorporated communities of Lemon Cove and Three Rivers as well as to Sequoia National Park where SR 198 terminates and continues as the General's Highway.

State Routes 137 and 190

Both of these expressways are at grade and offer major throughways for southern Tulare County. SR 137 starts at Waukena, west of Tulare, where it eventually turns into Tulare Avenue and heads east where it merges with SR 65 near Lindsay. SR 190 begins at SR 9 heading east as a typical two lane County road until it crosses SR 65 into Porterville, where it changes into an at-

grade expressway through town, eventually turning into a two lane mountainous roadway to where it ends in Ponderosa.

Dairy-Service Roads

The operation of dairies and other bovine facilities with their associated truck vehicle trips has resulted in gradual damage to the County road system surfaces. The damage has been evident where dairies have been located in County areas served by those local roads which were not adequately designed or paved to withstand truck vehicle trips and their associated weight loadings.

The Tulare County Association of Governments prepared in 2012 the Tulare County Dairy Routes Study,⁵ which is Appendix H of this *EIR*. This document evaluated the physical condition of the County roads serving the dairy industry and provided the following Summary Tables as to costs of road rehabilitation.

**Table 3.14-1A
Summary Table: Potential Rehabilitation Costs
All Engineered Dairy Roads**

Road Conditions	Miles	Cost Factor (per mi.)	Total
Worst	8.24	\$1,040,000	\$8,572,155
Poor	34.59	\$812,500	\$28,101,885
Moderate	81.05	\$650,000	\$52,679,731
Good	75.97	\$500,000	\$37,985,528
Best	86.62	\$18,750	\$1,624,075
Total	286.46		\$128,963,374

**Table 3.14-1B
Summary Table: Potential Rehabilitation Costs
All Non-Engineered Dairy Roads**

Road Conditions	Miles	Cost Factor	Total
Worst	24.43	\$1,000,000	\$24,434,111
Poor	51.92	\$306,250	\$15,902,021
Moderate	72.86	\$231,250	\$16,849,265
Good	36.12	\$162,500	\$5,869,308
Best	43.07	\$18,750	\$807,548
Total	228.41		\$63,862,253

Table 3.14-1C
Summary Table: Potential Rehabilitation Costs
All Engineered and Non Engineered Dairy Roads

Road Conditions	Miles	Total
Worst	32.68	\$33,006,265
Poor	86.51	\$44,003,906
Moderate	153.91	\$69,528,996
Good	112.09	\$43,854,837
Best	129.69	\$2,431,623
total	514.87	\$192,825,627

Neither County of Tulare funding resources nor measures to require existing dairy/bovine facilities operators to fund road repairs are available or in place to maintain or to replace damaged road surfacing.

Existing Traffic Volumes

Appendix I presents information on existing traffic volumes on roadways affected by the proposed Program. These are shown in Figure 3.14-2.

For each roadway, the volume-to-capacity ratio is the primary indicator of the roadway’s performance. Volume-to-capacity is a measure of demand and supply, and is equal to the number of vehicles utilizing a road segment divided by the vehicular capacity of that segment. For example, if the utilized volume is 1,500 vehicles per hour and the segment capacity is 2,000 vehicles per hour, the volume-to-capacity ratio is 0.75. This ratio is one basis for a letter grade called Level of Service (*LOS*). A more complex rating system based partly upon intersection-related traffic delays is utilized to define intersection levels of services (*LOS*). *LOS* threshold volumes for roadway segments are defined in Table 3.14-2.

The *LOS* is identified with a letter from A through F. The letter A represents free traffic flow with few vehicles and easy maneuverability while the letter F represents severe congestion with bumper-to-bumper traffic at slow speeds or excessive intersection delay. *LOS* is important to all transportation modes since all other modes depend on streets and related roads for access. It should be noted that theoretical *LOS* ratings for roadways may not be fully achievable if road design or surfacing conditions do not permit design speeds.

The *LOS* standard for Tulare County roadways and intersections is “D,” as stated in Policy TC-1.16 of the Tulare County General Plan.

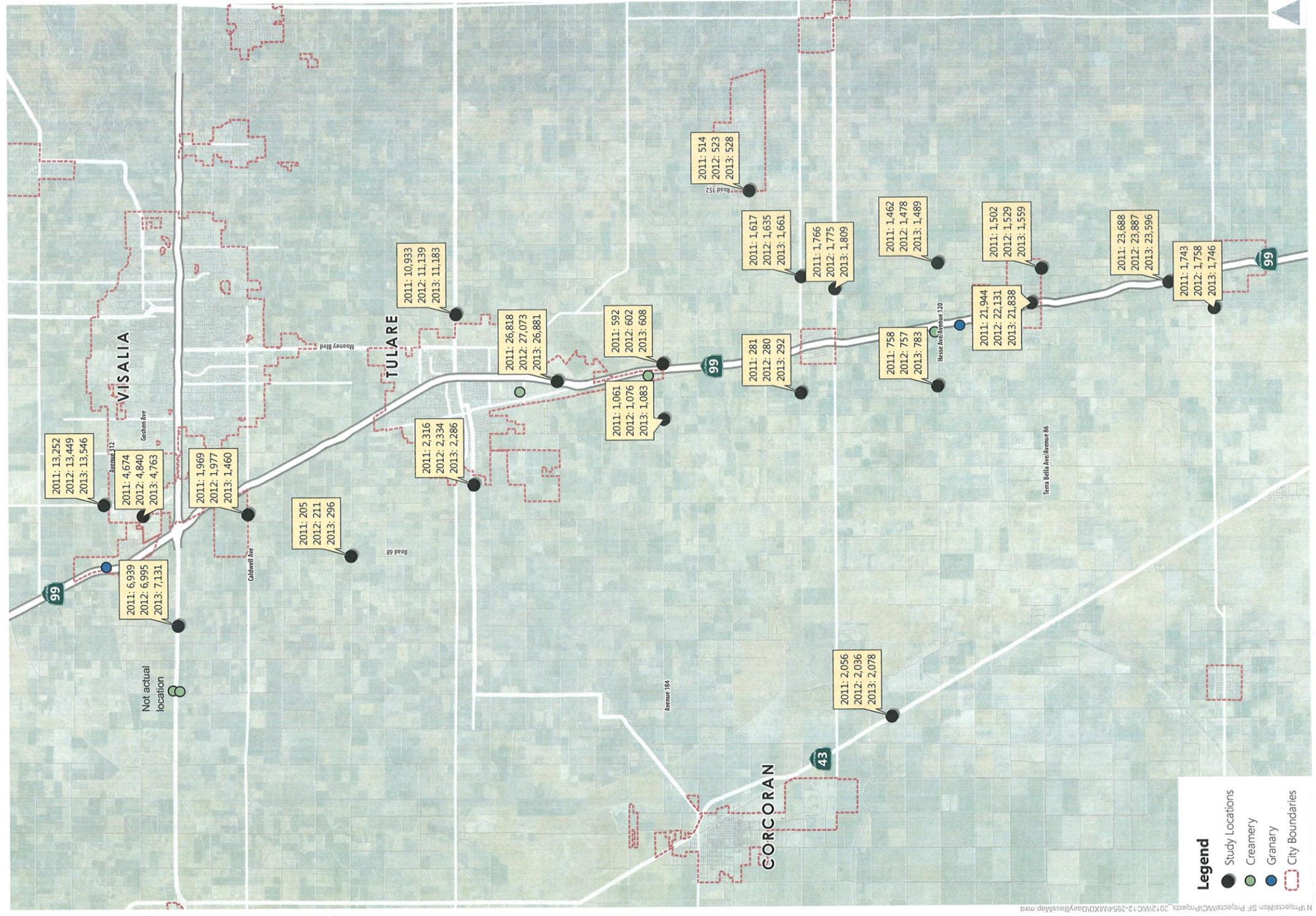


Figure 1
Existing Background Average Daily Total Volumes



EXISTING BACKGROUND AVERAGE DAILY TOTAL VOLUMES

Figure
3.14 - 2

**Table 3.14-2
Street and Highway Level of Service Threshold Volumes⁶**

Total Average Dairy Traffic (Both Directions) ADT					
Roadway Type	A	B	C	D	E
6-Lane Freeway	36,900	61,100	85,300	103,600	115,300
4-Lane Freeway	23,800	39,600	55,220	67,100	74,600
6-Lane Arterial	7,300	44,700	52,100	53,500	-
4-Lane Arterial	4,800	29,300	34,700	35,700	-
2-Lane Collector	-	4,200	13,800	16,401	16,900

All volumes are approximate and assume ideal roadway characteristics. Actual threshold volumes for each *LOS* listed above may vary depending on a number of factors including curvature and grade, intersection or interchange spacing, percentage of trucks and other heavy vehicles, land widths, signal timing, on-street parking, amount of cross traffic and pedestrians, driveway spacing, etc. *ADT* = Average Daily Traffic

IMPACTS

**Impact #3.14.1 - Performance of Circulation System:
[Evaluation Criteria (a)]**

Construction of expanded and new dairies and other bovine facilities, including Dairy *CAP GHG* reduction measures with construction impacts, would result in short-term traffic impacts. Construction activities at each facility would be short-term and separated geographically, and construction activities would be spread over the 2013-2023 time horizon.

Appendix I presents projections of 2023 truck and employee trips based on two projections of herd growth, a 1% annual growth resulting in 1.111 million animals and a theoretical “cap.” The “cap” projection assumes 1.237 million animals, which is higher than the 1.205 million animals assumed in the rest of this *EIR* based on a 1.5% annual growth rate; traffic growth based on the cap projection is therefore higher and more conservative than what would be expected under a 1.5% growth scenario.

Figure 3.14-3 illustrates projected (2023) background traffic plus average daily Program traffic (excerpted from Appendix I). Tabulating the data from Figure 3.14-3 and Table 3.14-2, and utilizing Tulare County’s *LOS* standard (*LOS “D”*), Table 3.14.3 presents post-project *LOS* on affected roadways. It indicates that post project average daily traffic would not cause any roadway segment to fall below *LOS D*. Therefore, the proposed Program would have a less than significant impact on traffic congestion.

Conclusion: Because the proposed Program would be consistent with the General Plan *LOS* performance standard of *LOS D*, the proposed Program impacts are *less than significant*.

Mitigation Measures: None are required.

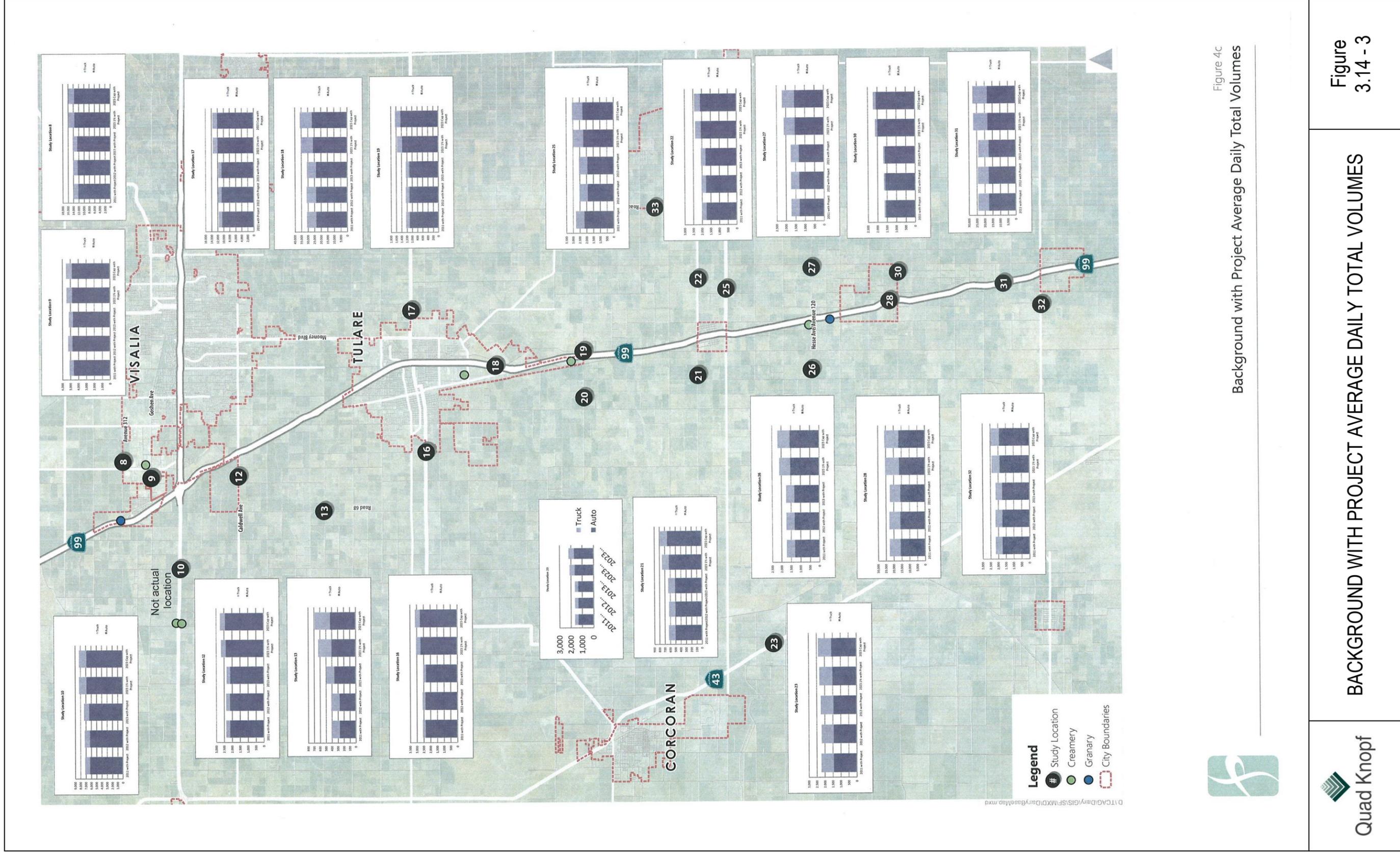


Figure
3.14 - 3

Table 3.14-3
LOS Analysis, Program-Affected Roadways

Road Segment*	Average Daily Traffic with Project	Lanes	LOS "D" Threshold
8	16,000	2	16,401
9	5,500	2	16,401
10	8,000	2	16,401
12	2,600	2	16,401
13	700	2	16,401
16	3,100	4	35,700
17	13,900	2	16,401
18	35,000	4	35,700
19	1,600	2	16,401
20	2,100	2	16,401
21	800	2	16,401
22	2,450	2	16,401
23	2,400	2	16,401
25	3,000	2	16,401
26	2,100	2	16,401
27	2,100	2	16,401
28	25,000	4	35,700
30	2,100	2	16,401
31	2,600	4	35,700
32	2,500	2	16,401

*See Figure 3.14-3

Impact #3.14.2 – Change Air Traffic Patterns:
[Evaluation Criteria (c)]

Given its location and land uses, the proposed Program would have no potential impact on air traffic patterns.

Conclusion: The proposed Program would result in *no impacts*.

Mitigation Measures: None are required.

Impact #3.14.3 – Increase Road Hazards:
[Evaluation Criteria (d)]

Access and egress to and from dairy and other bovine facilities by milk trucks and other industry-related vehicles may result in potential traffic hazards. However, the proposed *ACFP* includes several measures to minimize road hazards. These include requiring on-site parking, and requiring owners and operators to obtain an encroachment permit for each access/egress point with the County road system; the permit requires the design of such points to minimize potential hazards.

Conclusion: Because the proposed Program would not substantially increase road hazards, impacts are *less than significant*.

Mitigation Measures: None are required.

**Impact #3.14.4 – Emergency Access Interference:
[Evaluation Criteria (e)]**

Given its location and land uses, the proposed Program would have no effect on emergency access.

Conclusion: There is *no impact*.

Mitigation Measures: None are required.

**Impact #3.14.5 – Other Transportation Mode Conflict
[Evaluation Criteria (f)]**

Given its location and land uses, the proposed Program would have minimal impact on public transit, bicycle or pedestrian facilities. Dairies and other bovine facilities would be located in rural areas and would have minimal effects on these transportation modes.

Conclusion: Because the proposed Program would not conflict with adopted plans, policies or programs for mass transit or bicycle and pedestrian facilities, impacts are *less than significant*.

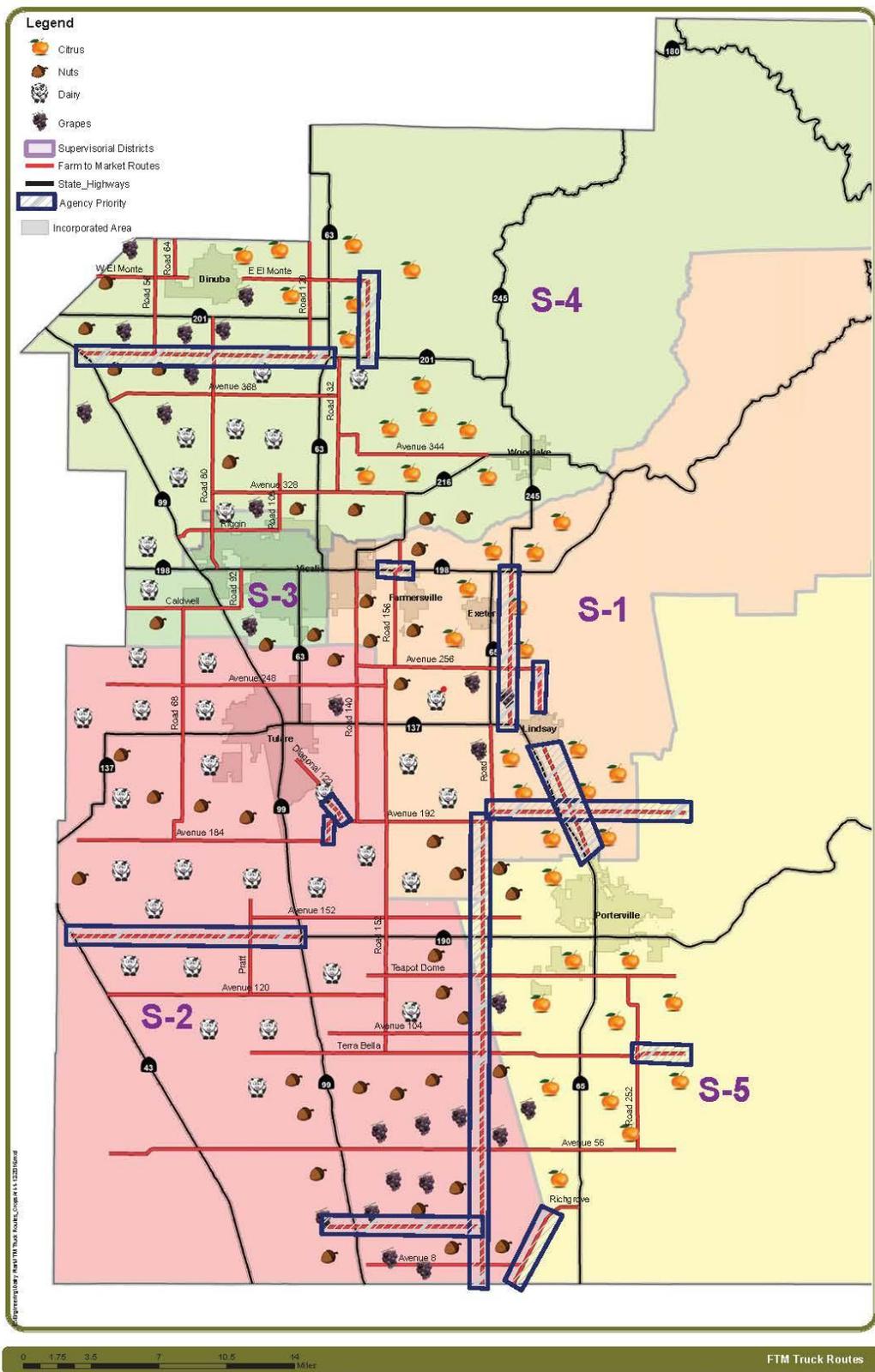
Mitigation Measures: None are required.

**Impact #3.14.6 – Accelerated Road Deterioration:
[Evaluation Criteria (g)]**

The operation of dairies and other bovine facilities with their associated truck traffic has accelerated the deterioration of County road system surfacing. Such acceleration has been particularly evident when dairies have been, for both economic and environmental reasons, located in County areas served by local roads which were inadequately designed and paved to withstand truck loadings.

To assist in evaluating road deterioration impacts, the Tulare County Association of Governments (TCAG) prepared a Traffic Impact Study (Appendix H) delineating roads serving farm-to-market traffic, including projected dairy truck traffic (Figure 3.14-4).

The proposed Farm to Market Program spearheaded by the Tulare County Association of Governments (TCAG) is expected to provide an advance allocation of Measure R funding to the County to the extent of approximately twenty million dollars to address road deterioration impacts from farm to market truck travel.



FARM TO MARKET ROUTES

Figure 3.14 - 4

Additionally, the County has required, and will continue to require, conditions of approval – based on a reasonable nexus developed on a case-by-case basis – on permits issued for new and expanding dairies. These conditions of approval will require either that the dairy permit applicant provide in-kind improvements or a pay a reasonable fee to the County to address such road deterioration impacts to the extent feasible.

Conclusion: Because the proposed Program would contribute to accelerated road deterioration, the impact is *significant*.

Mitigation Measure #3.14.6A: The County, through RMA, is committed in good faith through its Pavement Management System and the proposed Farm to Market Road Program to expend funds to insure that road deterioration impacts are mitigated to the extent feasible. In doing so, the County will conduct in good faith an annual review of roads that are affected by dairy traffic. Based on this annual review, the County will prioritize the expenditure of funds to mitigate road deterioration conditions to the extent feasible.

Mitigation Measure #3.14.6B: In addition to the above, the County will require of each new or expanded dairy or bovine facility a pavement mitigation fee for roads servicing the dairy or facility. Such fee shall be based upon projected proportional truck loading impacts and the costs to address such impacts. Such fee shall be based on a reasonable nexus and be imposed as a condition through dairy project review. The currently-proposed county-wide traffic impact fee does not include dairies or bovine facilities. Should it be modified to do so, credit will be given the dairy or bovine facility applicant by reducing the pavement maintenance mitigation fee by the amount to be paid under a county-wide impact fee program.

Significance after Mitigation: Implementing the pavement maintenance mitigation fee for the County road system impacted by new or expanding dairy/bovine facilities will reduce the County’s road maintenance costs. However, because fees would likely be insufficient to repair all such road damage, the proposed Programs’ impacts are considered *significant and unavoidable*.

REFERENCES

¹ This criterion is not analyzed in this EIR because Tulare County currently has no adopted congestion management program.

² Tulare County Association of Governments. 2014. Regional Transportation Plan and Sustainable Communities Strategy.

³ <http://www.tularecog.org/cmp/>, accessed December 1, 2105.

⁴ County of Tulare. 2010. General Plan Background Report.

⁵ Tulare County Association of Governments. 2012. Tulare County Dairy Routes Study.

⁶ Florida DOT Tables (2000 HC) Note: Florida DOT tables are used as an industry standard

CHAPTER FOUR
CUMULATIVE IMPACTS

CHAPTER FOUR – CUMULATIVE IMPACTS

Introduction

CEQA Guidelines Section 15130(a) requires that an *EIR* discuss the cumulative impacts of a proposed project when the project’s incremental effect is cumulatively considerable. The following section evaluates the potential for the proposed Program to contribute to significant cumulative impacts, and whether these contributions are cumulatively considerable.

Cumulative impacts of existing plus expanded or new dairy or other bovine facilities are discussed for each resource. In addition, *CEQA* requires the cumulative impact analysis to consider the cumulative impacts caused by other (non-dairy/bovine) closely related probable future projects. (*CEQA* Guidelines Section 15355(b).) This is done for each resource by using a “summary of projections” or “plan” approach. (*CEQA* Guidelines Section 15130(b)(1)(B).)

4.1 "Buildout" Projections

As discussed in Chapter 2, “Program Description, Objectives, and Environmental Setting,” the use of a 1.5% annual growth rate in herd size between 2013 and 2023 is reasonable, conservative, and supported by substantial evidence. In contrast, an impact analysis based on maximum theoretical dairy facilities buildout capacity in the County would be speculative. Theoretically, buildout capacity analysis was attempted by two methods:

1. Evaluation of zoned-land, Program area dairy development capacity. (See Appendix J.)

The land currently occupied by dairies, both inside windsheds and including the total land General Plan-designated for dairies, and the acreages of crops in the project area, were aerial photo-determined. Assuming that dairy expansions and new dairies prefer, economically, to avoid citrus, nut, and orchard plantings, the data indicated that not only is there land theoretically available for dairy expansion but that such land availability would permit economically preposterous dairy herd expansion. The missing and vital data in these projections include the constraints on dairy expansion by *ACFP* required setbacks and separations - dairy to dairy, dairy to orchard/vine crops, dairy to residences:

- The gross land area theoretically available for further dairy construction is so constrained by existing and updated *ACFP* separation requirements that the net area truly available cannot be calculated.
- Assumptions regarding how much dairy herd expansion can take place on existing dairy farmland and how much expansion or new dairy development must take place on “new” farmland cannot be buttressed with available data.
- The future relative economic value of further development of dairies, citrus and nut orchards on available, properly zoned, Tulare County agricultural land will influence dairy facility development in the County.

- The ultimate growth in Tulare County dairy herd size which would be projected by this methodology, perhaps 250% times existing herd numbers, is unrealistic.

After a thorough and comprehensive review and analysis of the data which would serve as a basis for these calculations, it was determined that this approach is not adequate to enable a non-speculative buildout projection.

2. Evaluation of Program area applied-nutrient capacity. (See Appendix J.)

A comprehensive and detailed trial analysis of dairy buildout limitations based on the nitrogen and salts produced in dairy stock manure, on available data regarding fertilizer import to the County, and on County crop demands for total nutrients was made (salts were determined to not be a limiting factor).

This method for determination of buildout herd size was discarded because it required many unreliable assumptions. Maximum nitrogen-based allowable manure usage in the Program area was calculated. However, data regarding the amounts of commercial fertilizer providing nitrogen to each of various crops in the area is not available. There is no regulatory limit on the amount of manure which is used on non-dairy-support crops, nor on the amount of manure which may be trucked out of the Program area. Developing new manure-usage technologies such as digesters will reduce manure-based nitrogen impacts.

It was determined that this buildout capacity analysis was impractical because it required detailed information regarding imported fertilizer nutrients, regarding the essential timing of nutrients applications by manure and by fertilizers, the regulatory-allowable and crop-tolerant manure application rates, and the impact of out-of-County manure transport option. Developing this information would require an economically infeasible county-wide, 900,000 acre, dairy-by-dairy field survey.

Thus, any presumed or projected geographically or nutrient based limitations on buildout are unrealistic and infeasible to develop. Even if they could be estimated, such limitations could be overcome by dairies utilizing existing dairy land more efficiently in accord with an approved nutrient management plan, increased out-of-County manure export, manure usage as digester or co-digester feed stock, manure usage in composting facilities and the potential economics of dairy farming versus other farming activities on available land.

4.2 Cumulative Impacts

AESTHETICS

The area of analysis for cumulative impacts for aesthetics is Tulare County. Cumulative aesthetic impacts would be significant because the General Plan Update *EIR* identifies several significant unavoidable aesthetic impacts associated with County-wide growth and development.

Implementation of the proposed Program would result in changes to the visual character of the Program area and would contribute to these impacts. However, as discussed in Chapter 3, the development of future facilities would be aesthetically consistent with the generally rural character of the Program area. Future development would be subject to County building and setback requirements and would represent a continuation of growth consistent with the existing aesthetic character.

Implementation of the proposed Program would have a significant impact on light and glare, and contribute to cumulative impacts on light and glare, and contribute to cumulative light and glare impacts which were judged significant in the General Plan Update *EIR*.

Conclusion: Based on the above analysis, cumulative aesthetic impacts are significant, and the proposed Program contributions are *less than cumulatively considerable*.

Mitigation Measures: The mitigation measure in Section 3.1 of this *EIR* is also applicable to cumulative impacts.

Significance after Mitigation: This impact remains *cumulatively considerable*.

Mitigation Measures: None are required.

AGRICULTURAL LANDS/FOREST RESOURCES

The area of analysis for cumulative impacts for agricultural lands/forest resources is Tulare County. Dairies and bovine facilities are considered an agricultural use. New or expanded dairies and other bovine facilities would not directly or indirectly convert to non-agricultural use, conflict with agricultural zoning or Williamson Act contracts, or adversely affect forest lands.

Conclusion: Based on the above analysis, there is *no cumulative impact* to which the proposed Program contributes.

Mitigation Measures: None are required.

AIR QUALITY

Per *SJVAPCD CEQA* guidance, if project specific emissions exceed the *SJVAPCD* thresholds of significance for criteria pollutants, the project would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the District is in non-attainment under applicable federal or state ambient air quality standards. As discussed in Impact #3.3.2, the proposed Program emissions would exceed *SJVAPCD* significance thresholds for *VOC* (an ozone precursor), *PM₁₀*, and *PM_{2.5}*. Therefore, the proposed Program's emissions of these pollutants would also be cumulatively considerable.

The unmitigated projected cumulative animal emissions in Tulare County are provided in Table 4.2-1. Please refer to Appendix E for information on the methodology and assumptions used to generate the estimates.

**Table 4.2-1
Cumulative 2023 Emissions without Mitigation
(Tons/Year)**

Source	VOC	CO	SOx	NOx	PM ₁₀	PM _{2.5}	NH ₃
Farm Equipment Exhaust	21	182	0.6	157	6	6	0
Farm Tilling and Harvesting Dust	0	0	0.0	0	808	121	0
Farm Windblown Dust	0	0	0.0	0	460	80	0
Farm Unpaved Road Dust	0	0	0.0	0	973	97	0
Dairy Equipment Exhaust	97	752	1.8	596	30	27	0
Dairy Unpaved Road Dust	0	0	0.0	0	104	10	0
Truck Trips	7	29	0.3	75	18	6	0
Dairy Employee and Visitor Trips	10	66	0.2	7	35	9	0
Dairy Cattle Housing Dust	0	0	0.0	0	2,801	320	0
Dairy Manure Decomposition/Enteric Fermentation	6,470	0	0.0	0	0	0	32,084
Dairy Animal Feed	7,056	0	0.0	0	0	0	0
Total Emissions	13,661	1,029	2.9	835	5,235	676	32,084
SJVAPCD Threshold	10	100	27	10	15	15	--

Notes:

1. Cumulative conditions represent future (10 year horizon) buildout conditions, including existing emissions, in 2013.
2. Dairy emissions include support stock at heifer and calf ranches.
3. Farm emissions are associated with dairy and cattle ranch support crops.
4. Construction emissions are averaged over a 10-year period.

The mitigated projected cumulative animal emissions for Tulare County are provided in Table 4.2-2. This estimate accounts for reductions associated with implementation of the Air District's mitigation measures described in Section 3.3, Air Quality, of this *EIR*.

**Table 4.2-2
Cumulative 2023 Emissions with Mitigation
(Tons/Year)**

Source	VOC	CO	SOx	NOx	PM ₁₀	PM _{2.5}	NH ₃
Farm Equipment Exhaust	21	182	0.6	157	6	6	0
Farm Tilling and Harvesting Dust	0	0	0.0	0	808	121	0
Farm Windblown Dust	0	0	0.0	0	460	80	0
Farm Unpaved Road Dust	0	0	0.0	0	973	97	0
Dairy Equipment Exhaust	97	752	1.8	596	30	27	0
Dairy Unpaved Road Dust	0	0	0.0	0	126	13	0
Truck Trips	7	29	0.3	75	18	6	0
Dairy Employee and Visitor Trips	10	66	0.2	7	35	9	0
Dairy Cattle Housing Dust	0	0	0.0	0	2,733	312	0
Dairy Manure Decomposition/Enteric Fermentation	5,512	0	0.0	0	0	0	32,084
Dairy Animal Feed	7,183	0	0.0	0	0	0	0
Total Emissions	12,830	1,029	2.9	835	5,189	671	32,084
SJVAPCD Threshold	10	100	27	10	15	15	--

Notes:

1. Cumulative conditions represent future (10 year horizon) buildout conditions, including existing emissions, in 2013.
2. Dairy emissions include support stock at heifer and calf ranches.
3. Farm emissions are associated with dairy and cattle ranch support crops.
4. Construction emissions are averaged over a 10-year period.
5. Mitigation measures, which would reduce *PM*₁₀ and *PM*_{2.5} emissions, include (a) frequent corral scraping and/or manure removal (weekly basis) using a pull type manure harvesting equipment in the morning hours when moisture is in the air; (b) feeding young stock (heifers and calves) near dusk; (c) shaded areas in open corrals; (d) downwind and upwind shelterbelts (plant trees or shrubs as a windbreak); and (e) sprinkling of open corrals. All measures apply to new or expanding dairies.

It should be noted that the figures in Table 4.2-2 represent gross estimates which assume that all dairies have similar feed programs and design features and generate employee and truck trips of similar frequency and length.

Despite the absence of a *SJVAPCD* threshold for ammonia emission and of any pertinent ambient air quality standard, the tonnage of annual Program-related ammonia emissions is so significant, as is ammonia's contribution to *PM*_{2.5} levels, that it should be considered cumulatively considerable.

Conclusion: Based on the analysis in Impact #3.3.3 and the above analysis, cumulative impacts of *VOC*, *NO_x*, *PM₁₀*, *PM_{2.5}*, and ammonia in the San Joaquin Valley Air Basin are significant, and the proposed Program's incremental contributions to *VOC*, *PM₁₀*, *PM_{2.5}*, and ammonia impacts (based on existing emissions plus emissions of expanded or new facilities) are *cumulatively considerable*.

Mitigation Measures: The mitigation measures in Section 3.3 of this *EIR* are also applicable to the proposed Program's contributions to significant cumulative impacts.

Significance after Mitigation: This impact remains *cumulatively considerable*.

BIOLOGICAL RESOURCES

The area of analysis for cumulative impacts for biological resources is Tulare County. The development of approximately 185,000 acres of dairy and other bovine facilities over a period of many years has had a substantial adverse effect on the County's biological resources. Implementation of the proposed Program would contribute to the ongoing loss of natural and agricultural lands which provide habitat for a variety of federal and State listed special status species, as well as other wildlife and plant resources. Cumulative biological impacts would be significant because the General Plan Update *EIR* identifies significant unavoidable biological impacts associated with County-wide growth and development. Although new and expanded facilities would be evaluated for biological resources, the further loss of open space areas and habitats as a result of the proposed Program could contribute considerably to a significant cumulative impact to biological resources.

Conclusion: Based on the above analysis, cumulative biological impacts are significant, and proposed Program contributions are *cumulatively considerable*.

Mitigation Measures: The mitigation measures in Section 3.4 of this *EIR* are also applicable to the proposed Program's contributions to significant cumulative impacts.

Significance after Mitigation: This impact remains *cumulatively considerable*.

CULTURAL RESOURCES

The area of analysis for cumulative impacts for cultural resources is Tulare County. Implementation of the proposed Program could contribute to potential loss of cultural resources through grading and other construction activity. Cumulative cultural resources impacts would then be significant because the Tulare County General Plan Update *EIR* identifies several significant unavoidable cultural resources impacts associated with County-wide growth and development.

Conclusion: Based on the above analysis, cumulative cultural resources impacts are significant, and proposed Program contributions are *cumulatively considerable*.

Mitigation Measures: The mitigation measures in Section 3.5 of this *EIR* are also applicable to cumulative impacts.

Significance after Mitigation: This impact remains *cumulatively considerable*.

GEOLOGY, SOILS AND MINERALS

The area of analysis for cumulative impacts for geology, soils and mineral resources is Tulare County. Implementation of the proposed Program would contribute to additional structures subject to geological and soil related risks. Future development would be required to comply with federal, State and local regulations designed to reduce risks from hazards such as earthquakes, landslides and soil erosion. Cumulative geology, soils, and minerals impacts would not be significant because according to the General Plan Update *EIR*, impacts associated with County-wide growth and development would be less than significant post-mitigation.

Conclusion: Based on the above analysis, cumulative geology, soils, and minerals impacts are less than significant, and the proposed Program contributions to these impacts are *less than cumulatively considerable*.

Mitigation Measures: None are required.

GREENHOUSE GASES

The area of analysis for *GHG* cumulative impacts is the state of California. As discussed in Section 3.7, total California *GHG* emissions for 2013 were 459.3 million gross metric tons *CO₂e*. By sector, the largest source was transportation at 37 percent, followed by industrial at 23 percent, electricity generation at 20 percent and agriculture at 8 percent.¹ Statewide livestock-related emissions from dairies and feedlots accounted for 12.14 million gross metric tons of *CO₂e*, and enteric fermentation accounted for 11.78 million gross metric tons.²

In Tulare County, the unmitigated 2023 cumulative *GHG* emissions (existing plus expanded/new dairy and other bovine facilities) are about 8.9 million metric tons *CO₂e*, as shown in Table 3.7-3. This cumulative impact is significant, and the proposed Program incremental contribution of about 1.4 million metric tons *CO₂e* (see Section 3.7) is cumulatively considerable.

Conclusion: Based on the above analysis, cumulative *GHG* emissions impacts are significant, and the proposed Program's incremental contributions to these impacts (emissions of expanded or new facilities) are *cumulatively considerable*.

Mitigation Measures: The mitigation measures in Section 3.7 of this *EIR* are also applicable to cumulative impacts.

Significance after Mitigation: This impact remains *cumulatively considerable*.

HAZARDS AND HAZARDOUS MATERIALS

The area of analysis for cumulative impacts for hazards and hazardous materials is Tulare County. Implementation of the proposed Program would contribute to a potential increase in impacts from hazards and hazardous materials. Potential release of hazardous materials would be

localized within the area of an individual facility and would not affect the County as a whole. Future development would be required to comply with policies and standards designed to minimize impacts resulting from hazards and hazardous materials. Cumulative hazards and hazardous materials impacts would not be significant because according to the General Plan Update *EIR*, impacts associated with County-wide growth and development would be less than significant post-mitigation.

Conclusion: Based in the above analysis, cumulative hazards and hazardous materials impacts are less than significant, and the proposed Program contributions are *less than cumulatively considerable*.

Mitigation Measures: None are required.

HYDROLOGY / WATER QUALITY

Water Quality Impacts

The area of analysis for cumulative impacts for water quality is the Tulare Lake Basin. Water quality concerns in the Tulare Lake Basin are described in the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan).³

Dairies and other confined animal facilities have both direct and cumulative impacts on water quality in the County and the Tulare Lake Basin.

Direct cumulative impacts include the addition of nitrogen and salts to groundwater from manure treatment and storage lagoons⁴ and from the usage of diluted manure storage effluent for crop irrigation and fertilization. The herd size-proportionate impact from existing dairies and bovine facilities was greater than it will be from new and expanding dairies and facilities; current treatment/storage lagoon design criteria imposed by the Regional Water Quality Control Board are more stringent than in the past. The inclusion in Waste Discharge Recruitments for new or expanded dairies and other bovine facilities of Regional Board General Order-governing waste discharge requirements for existing dairies and the regulatory limits of State Water Resources Control Board Resolution No. 68-16 (the anti-degradation policy) will reduce nitrogen and salts discharges.⁵ For example, the Regional Board now requires each dairy facility to prepare and implement a salinity management plan and a nutrient management plan limiting the amount of manure on each dairy to that which can be utilized by onsite crops.

Irrigation generally results in increased salinity in the underlying groundwater due to salts in the applied irrigation water. Application of gypsum to improve water infiltration on irrigated lands contributes large amounts of salt to the groundwater in some areas of the valley. Natural mineral dissolution also contributes salt to the groundwater, although this factor is believed to generally be minimal in most of the eastern part of the San Joaquin Valley including the proposed Program area. Salt deposition is counter-balanced by river, stream and canal seepage. There are significant groundwater flows in the Program area, including outflows to adjoining sub-basins. This outflow has some potential to maintain a salt balance.

A University study⁶ is being utilized by the Regional Water Quality Control Board as a basis for analysis in its dairy permitting process: With respect to cumulative impacts of dairy manure utilization, the study states:

“At the regional scale, it therefore appears that when dairy manure is applied on croplands, the overall salt balance of the Central Valley appears is unaffected. Harvested plants absorb dissolved minerals from the soil and the land application of dairy manure simply redistributes them.

Despite the apparent regional balance, two additional issues must be considered...which highlight the localized increase in salt load when comparing animal farming systems (including dairies) to other farming systems:

...The concentration of animals in dairies and other animal farming operations means that the salt loading to land is concentrated in the vicinity of dairies, where the manure is most likely to be land-applied, whereas the forage crop production (from where the salts originate) occurs over a much larger land area and is more dispersed.

As a result, salt loading in dairy areas are expected to increase relative to non-dairy areas) and, over the long run, the salinity of groundwater underneath these areas may be affected.”

Growth in the number of dairies in the San Joaquin Valley has caused an increase in salts accumulation through the use of manure water for irrigation, and through the use of manure for fertilizer, above that which would occur with existing irrigation water supplies and the usage of commercial fertilizers. Such application must be within the limits established by the Regional Water Quality Control Board and must be managed in accord with each facility's approved Report of Waste Discharge. Dairy lagoon leakage, although perhaps minimal in comparison to manure water usage, is another salt contributor, and a potential nitrogen contributor.

Cumulative impacts on groundwater basin water quality could also occur with respect to nitrogen contamination due to manure application rates in excess of agronomic usage demands, although the nitrogen loading impact of an individual dairy is not necessarily significant because of two factors:

1. Direction and rate of groundwater flow; and
2. Recharge and interception of water by pumpage.

Typical rates of groundwater flow in the Kaweah-Tule Unit are probably several hundred feet per year. As groundwater moves down-gradient, there is normally dilution due to recharge (i.e., canal seepage and irrigation). Also, pumpage of irrigation and dairy wells may intercept part of groundwater flow. Because of these factors, principally dairies in close proximity to one another and of designs not conforming to current Regional Water Quality Control Board and County regulations have a cumulative nitrogen impact on groundwater quality.

The separation required by the *ACFP* between confined animal facilities and the groundwater protection requirements imposed by the *ACFP* and the *RWQCB* and their predecessor regulations regarding dairy facility design, reduce the impact of cumulative water quality impacts from the construction and operation of dairy facilities in Tulare County. Water quality bacterial contamination or nitrate degradation from an individual dairy facility would occur principally beneath such facility and with a non-uniform vertical and lateral distribution pattern. It is possible, however, that such contamination, if it exists, may in some instances intersect with or infringe upon a similar pattern from another permitted dairy, thus creating a cumulative water quality impact.

The indirect cumulative impacts of dairies and other bovine facilities on water quality result in part from the increased irrigation and fertilization requirements of the double-cropping and alfalfa production essential to support the County's dairy industry (see the cumulative water supply impacts). Such additional irrigation, particularly when supplied by out-of-basin surface water, adds incremental salts to the County's and the Basin's groundwater.

Additionally, the Managing Dairy Manure report⁷ offers this somewhat related comment, regarding the indirect impact of dairies on groundwater salts accretion:

“The production of forage crops for consumption by Central Valley animals replaces the production of food and fiber crops for human consumption. Most foods and fibers are exported from the Central Valley (salt export), while forage crops remain in the Central Valley. Hence, for each animal unit in the central Valley, there is a net increase in salt that remains in the Central Valley (via excretion and land application).”

Conclusion: Based on the above analysis, cumulative water quality impacts are significant, and the proposed Program's incremental contributions to these impacts (based on existing emissions plus emissions of expanded or new facilities) are *cumulatively considerable*.

Mitigation Measures: The mitigation measures in Section 3.7 of this *EIR* are also applicable to cumulative impacts.

Significance after Mitigation: This impact remains *cumulatively considerable*.

Water Supply Impacts

The area of analysis for cumulative impacts for water supply is Tulare County. Dairy and other confined animal facility water usage has both a direct and an indirect impact on water usage, and thus water supply, in the County.

Section 3.9 of this *EIR* discusses in detail under the heading “Long Term Average Water Supply Characteristics”, water supply and demand in Tulare County, documenting sources of surface water supply, the critical overdraft of the County's groundwater resources, and the historic water demand in the County. Impact #3.9.2 summarizes Program water demand, and concludes its impact to be significant and unavoidable.

Cumulative water supply impacts would be significant because the General Plan Update *EIR* identifies a significant unavoidable impact associated with County-wide growth and development, because of documented groundwater overdraft in the County, and because of significant water demand by the Program.

Conclusion: Based on the above analysis, cumulative water supply impacts would be significant, and the proposed Program's incremental contributions are *cumulatively considerable*.

Mitigation Measures: The mitigation measures in Section 3.9 of this *EIR* are also applicable to cumulative impacts.

Significance after Mitigation: This impact remains *cumulatively considerable*.

LAND USE/POPULATION/HOUSING

The area of analysis for cumulative impacts for land use/population/housing is Tulare County. The proposed Program would be consistent with the County's General Plan and Climate Action Plan. Dairy farms and bovine feedlot facilities are confined to rural agricultural areas and would not divide an established city or rural community in the County. The proposed Program would not induce substantial population growth or displace substantial numbers of existing housing or people. The County General Plan Update *EIR* does not identify significant land use, population, or housing environmental impacts associated with County-wide growth and development. Therefore, the proposed Program would not contribute to any significant land use, population, or housing impacts.

Conclusion: Based on the above analysis, land use, population, or housing environmental impacts are less than significant, and the proposed Program contributions to impacts are *less than cumulatively considerable*.

Mitigation Measures: None are required.

NOISE

The area of analysis for cumulative impacts for noise is Tulare County. Primary noise from future development will be from vehicular traffic (primarily truck traffic) as a result of implementation of the proposed Program. (Construction noise impacts and noise levels within milking barns are site-specific and not therefore not cumulative impact issues.) The County General Plan Update *EIR* identifies significant unavoidable traffic noise impacts, and the proposed Program's increase in traffic noise is considered significant.

Conclusion: Based on the above analysis, cumulative noise impacts are significant, and the proposed Program contributions to these impacts are *cumulatively considerable*.

Mitigation Measures: There are no additional feasible traffic noise mitigation measures other than those identified in the General Plan *EIR*.

Significance after Mitigation: This impact remains *cumulatively considerable*.

PUBLIC AND UTILITY SERVICES

The area of analysis for cumulative impacts for public and utility services is Tulare County. Implementation of the proposed Program would result in minimal increases in public and utility services. Any potential population increases (thereby affecting public and utility services) as a result of the proposed Program would be minor in comparison to County-wide growth.

The County General Plan Update *EIR* does not identify significant public services and utilities impacts associated with County-wide growth and development other than water supply (see cumulative hydrology and water quality cumulative impact section above) and solid waste. However, the proposed Program's solid waste disposal needs are minor, and less than cumulatively considerable.

Conclusion: Based on the above analysis, the proposed Program contributions to public services and utilities impacts (other than water supply) are *less than cumulatively considerable*.

Mitigation Measures: None are required.

RECREATION

The area of analysis for cumulative impacts for recreation is Tulare County. Implementation of the proposed Program would result in minimal increases in usage of recreational resources. Any potential population increases (thereby affecting recreational resources) as a result of the proposed Program would be minor in comparison to County-wide growth. The County General Plan Update *EIR* does not identify significant recreation impacts associated with County-wide growth and development.

Conclusion: Based on the above analysis, cumulative recreation impacts are less than significant, and the proposed Program contributions to these impacts are *less than cumulatively considerable*.

Mitigation Measures: None are required.

TRANSPORTATION/TRAFFIC

The area of analysis for cumulative impacts for transportation/traffic is Tulare County. The Program increase in traffic is not considered to be significant; traffic congestion impacts, as measured by Level of Services (*LOS*), on County roads or State highways would be less than significant. The County General Plan Update *EIR* identifies significant transportation impacts associated with increased vehicular traffic from County-wide growth and development. However, cumulative traffic congestion impacts on roadways affected by the proposed Program would be less than significant because proposed Program average daily traffic (*ADT*) when added to background growth in *ADT* would not result in Levels of Service below D. (See Section 3.14.)

Growth projected in the County General Plan would also contribute to deteriorating roadway conditions, a significant cumulative impact. Section 3.14 of this *EIR* finds that Program impacts, despite implementation of a maintenance fee as a condition of approval of new or expanded dairies or other bovine facilities, on road deterioration will remain significant.

Conclusion: Based on the above analysis, cumulative transportation impacts are significant, and proposed Program contributions to these impacts are *cumulatively considerable*.

Mitigation Measures: The mitigation measure regarding road surfacing deterioration in Section 3.14 of this *EIR* is also applicable to cumulative impacts.

Significance after Mitigation: This impact remains *cumulatively considerable*.

REFERENCES

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³ Central Valley Regional Water Quality Control Board, Region 5. 2004. Water Quality Control Plan for the Tulare Lake Basin Second Edition. Revised January 2004 with Approved Amendments. Available: http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/tlbp.pdf.

⁴ California Regional Water Quality Control Board Central Valley Regional. 2013. Waste Discharge Requirements General Order No. R5-2013-0122.

⁵ California State Water Resources Control Board. 1968. Resolution No. 68-16. Statement of policy with Respect to Maintaining High Quality of Waters in California.

⁶ University of California Division of Agriculture and Natural Resources, Committee of Experts on Dairy Manure Management. 2005. Managing Dairy Manure in the Central Valley of California. June 2005. Pages 63-64.

⁷ Harter, T. 2007. Groundwater Quality Protection: Managing Dairy Manure in the Central Valley of California. University of California Agriculture and Natural Resources. Page 58.

CHAPTER FIVE
EVALUATION OF ALTERNATIVES

CHAPTER FIVE – EVALUATION OF ALTERNATIVES

5.1 Introduction

CEQA Guidelines require that a reasonable range of alternatives to the proposed Program be discussed in this section of the *EIR*. The analysis of this section is consistent with *CEQA* Guidelines Section 15126.6.

As noted in *CEQA* Guidelines Section 15126.6(b), “...*Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment, the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.*”

CEQA Guidelines Section 15126.6(c) further states, “*The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency’s determination. Additional information explaining the choice of alternatives may be included in the administrative record.*”

CEQA Guidelines Section 15126.6(f) directs “...*That the range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision-making.*”

Additionally, the *CEQA* Guidelines state the following:

- The specific alternative of “no project” shall also be evaluated along with its impact. If the environmentally superior alternative is the “no project” alternative, the *EIR* shall also identify an environmentally superior alternative among the other alternatives. (Section 15126.6(e)(1)(2))
- An *EIR* need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. The *EIR* should briefly discuss the rationale for selecting the alternatives to be discussed. The *EIR* should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency’s determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an *EIR* are (i) failure

to meet most of the basic project objectives, (ii), infeasibility, or (iii) inability to avoid significant environmental impacts. (Section 15126.6(a)(c))

- “Feasible” means capable of being accomplished within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. (Section 15364)

5.2 Program Objectives

The range of alternatives selected is guided primarily by the need to either reduce or eliminate proposed Program impacts, and to achieve Program objectives. The general Program objectives are as follows:

1. To continue the regulation of the County’s dairy industry to protect and enhance the County’s resources, assure public health and safety, and minimize environmental impacts;
2. To identify and document those existing bovine facilities which are operating under valid *RWQCB* and *SJVAPCD* approvals, and to specify procedures to achieve compliance by those existing bovine facilities that are not yet in compliance;
3. To modify, as feasible, the scope of County regulatory responsibilities to avoid overlap and duplication with the water quality and air quality oversight provided by the *RWQCB* and the *SJVAPCD*;
4. To update and simplify the permitting processes for bovine facility expansions and the establishment of new bovine facilities consistent with the *ACFP*; and
5. To develop a Dairy and Feedlot Climate Action Plan that analyzes cumulative greenhouse gas (*GHG*) impacts of dairy and other bovine facilities, and streamlines project-specific *GHG* impact analysis.

5.3 Factors Considered in Selection of Alternatives

This section describes the process used in selection of alternatives. The proposed Program alternatives were selected in consideration of one or more of the following factors:

- The extent to which the alternative would accomplish most of the basic objectives of the proposed Program;
- The extent to which the alternative would avoid or lessen any of the identified significant environmental effects of the proposed Program;
- The potential feasibility of the alternative, taking into account site suitability, economic viability, and consistency with applicable plans and regulatory limitations.

5.4 Alternatives Considered and Eliminated from Further Analysis

In evaluating alternatives to the proposed Program, the County considered, but rejected two alternatives:

- **Retroactive Removal of Non-Permitted Dairies; No Expanded or New Dairies:** Under this alternative, existing dairies and other bovine facilities would be eliminated within *ACFP* buffer zones, herd sizes would be retroactively reduced to existing County-permitted levels, and herds would be eliminated if there is no existing permit. Compliance would require removal and/or relocation of non-compliant existing animals and dairy facilities.

No new dairies or other bovine facilities would be permitted in the County.

The retroactive reduction of herd sizes in excess of existing permits, elimination of non-permitted herds, relocation of facilities, and prohibition of new dairies or other bovine facilities was rejected because this alternative is legally infeasible, and would fail to meet most of the basic Program objectives.

- **Alternative Site Location:** As presented in Section 15126.6(f)(2)(A) of the *CEQA* Guidelines, the key question and first step in the analysis of alternative site locations is whether any of the significant effects of the Program would be avoided or substantially lessened by putting the Program in another location, and only locations that would avoid or substantially lessen any of the significant effects of the Program would be considered for inclusion in the *EIR*. If the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the *EIR* (Section 15126.6(f)(2)(B)).

The alternative location of the Program's future dairy/other bovine facilities was rejected because alternative locations of future facilities outside Tulare County, but within California, would not eliminate identified significant impacts of the Program or reduce them to less than significant levels. In addition, this alternative would fail to meet most of the basic Program objectives.

5.5 Alternatives Analyzed

The following sections present a description and evaluation of the potentially feasible alternatives analyzed:

1. **No Program (No *ACFP* Amendment and No Dairy *CAP*); and**
2. **Thirty-three Percent Reduced Herd Size and Support Stock, New and Expanding Dairies and Bovine Facilities (1% herd size growth rate).**

These alternatives are described in the next section and compared with the proposed Program. This chapter concludes with an analysis of the comparative environmental superiority of the various alternatives, as required by *CEQA*. The threshold criteria used in Chapter Three are used

in this section as a basis for judging the significance of, and comparing the impact conclusions related to each criteria for the Program versus each alternative.

5.5.1 NO PROGRAM ALTERNATIVE (NO ACFP AMENDMENT AND NO DAIRY CAP)

Under the No Program Alternative, the existing *ACFP* would continue to be implemented, and no Dairy *CAP* would be adopted. This alternative would not avoid or substantially lessen any of the proposed Program's significant environmental impacts. Existing dairy and other bovine facilities not currently in compliance with *SJVAPCD* and *CVRWQCB* regulations would be less likely to come into compliance, resulting in greater air quality and water quality impacts.

The *GHG* reduction measures included in the Draft Dairy *CAP* for expanded and new facilities would be less likely to be implemented because there would be no Dairy *CAP* to provide *CEQA* streamlining incentives. Impacts to *GHG* emissions, as well as to other resources benefitting from Dairy *CAP* implementation, such as air quality, energy, and transportation, would therefore increase under this alternative.

5.5.2 THIRTY-THREE PERCENT REDUCED HERD SIZE

The Thirty-three Percent Reduced Herd Size Alternative was chosen because it would reduce impacts to several environmental resources as compared to the proposed Program. Future growth of the dairy industry would occur under the Thirty-three Percent Reduced Herd Size Alternative, but at a growth rate of 1% per year over ten years rather than 1 ½% per year. A Dairy *CAP* similar to that in the Proposed Program would be implemented.

This alternative would proportionately reduce adverse direct and cumulative impacts associated with construction and implementation or expanded and new dairy and other bovine facilities, including impacts caused by Draft Dairy *CAP GHG* reduction measures with adverse construction impacts. Thus the Thirty-three Percent Reduced Herd Size Alternative would reduce adverse impacts within resource categories evaluated in this *EIR*. In no cases, however, would the proposed Program's impacts be reduced to less than significant levels.

5.6 Environmentally Superior Alternative

An *EIR* is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. (Section 15126.6(e)(2).) Table 5.4-1 compares the alternatives to the proposed Program in terms of the 15 impact topics that are analyzed in the Draft *EIR*.

Based on a review of the alternatives evaluated in this chapter, the Thirty-three Percent Reduced Herd Size Alternative would result in the least impact on the environment. Although the Thirty-three Percent Reduced Herd Size Alternative would be the environmentally superior alternative it would not fully achieve the basic proposed Program objective of enhancing the County's resources, including economic resources. It would also be inconsistent with a number of General Plan policies, including those that promote economic development in general and the continued productivity of agricultural resources in particular.

**Table 5.4-1
Impacts of Alternatives Compared to Proposed Program Impacts**

Impact No.	Impact	Impacts of Proposed Program (pre-mitigation)	Impacts of No Program Alternative	Impacts of Thirty-Three Percent Reduced Herd (pre-mitigation)
AESTHETICS				
3.1.1	Scenic Vistas and Visual Character	Less than Significant	Same	Same
3.1.2	Scenic Resources	Less than Significant	Same	Same
3.1.3	Light and Glare	Significant	Reduced	Reduced
AGRICULTURAL LAND/FOREST RESOURCES				
3.2.1	Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance	Less than Significant	Same	Same
3.2.2	Zoning Conflicts and Williamson Act Impacts	Less than Significant	Same	Same
3.2.3	Impact on Timberland Production and Forest Lands	Less than Significant	Same	Same
3.2.4	Conversion of Farmland or Forest Land	Less than Significant	Same	Same
AIR QUALITY				
3.3.1	Conflict with or Obstruct Implementation of any Applicable Air Quality Plan	Significant	Increased	Reduced
3.3.2	Cause a Violation of any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	Significant	Increased	Reduced
3.3.3	Result in a Cumulatively Considerable Net Increase of any Criteria Pollutant for Which the Project Region in Non-attainment	Significant	Increased	Reduced
3.3.4	Expose Sensitive Receptors to Substantial Pollutant Concentrations	Less than Significant	Increased	Reduced

Impact No.	Impact	Impacts of Proposed Program (pre-mitigation)	Impacts of No Program Alternative	Impacts of Thirty-Three Percent Reduced Herd (pre-mitigation)
3.3.5	Exposure of a Substantial Number of People to Sources of Objectionable Odors	Less than Significant	Increased	Reduced

BIOLOGICAL RESOURCES

3.4.1	Substantial Adverse Effect on Special Status Species	Significant	Same	Reduced
3.4.2	Substantial Adverse Effect on any Riparian Habitat or Other Sensitive Community	Significant	Same	Reduced
3.4.3	Substantial Adverse Effect on Wetlands and Jurisdictional Waters	Significant	Same	Reduced
3.4.4	Substantially Interfere with the Movement of Fish or Wildlife or Impede Wildlife Corridors, or Disturb Wildlife Nursery Sites	Significant	Same	Reduced
3.4.5	Conflict with any Local Policies or Ordinances Protecting Biological Resources	Less than Significant	Same	Reduced
3.4.6	Habitat Conservation Plan or Other Plan Conflicts	Less than Significant	Same	Reduced

CULTURAL RESOURCES

3.5.1	Disturbance of Historical or Archeological Resources	Significant	Same	Reduced
3.5.2	Destruction of Paleontological Resources or Geologic Feature	Significant	Same	Reduced
3.5.3	Disturbance of Human Remains	Significant	Same	Reduced

GEOLOGY, SOILS AND MINERAL RESOURCES

3.6.1	Seismic Effects	Less than Significant	Same	Reduced
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Impact No.	Impact	Impacts of Proposed Program (pre-mitigation)	Impacts of No Program Alternative	Impacts of Thirty-Three Percent Reduced Herd (pre-mitigation)
3.6.2	Landslides, Geologic Unit/Soil Instability	None	Same	Same
3.6.3	Soil Erosion, Topsoil Loss	Less than Significant	Same	Reduced
3.6.4	Expansive Soil Hazards	Less than Significant	Same	Reduced
3.6.5	Mineral Resources	Less than Significant	Same	Reduced
GREENHOUSE GAS/ENERGY IMPACT ANALYSIS				
3.7.1	Increase in GHG Emissions Compared to Existing Conditions	Significant	Increased	Reduced
3.7.2	Conflict with Tulare County's Climate Action Plan or TCAG's RTP/SCS	Significant	Same	Same
3.7.3	Inconsistent with the State's Ability to Achieve AB 32, EO B-30-15, and S-3-05 Emissions Reductions Targets	Significant	Increased	Reduced
3.7.4	Use Energy in an Inefficient, Wasteful or Unnecessary Manner	Less than Significant	Increased	Reduced
3.7.5	Increased Reliance on Fossil Fuels and Decreased Reliance on Renewable Energy Sources	Less than Significant	Increased	Reduced
HAZARDS AND HAZARDOUS MATERIALS				
3.8.1	Operational Hazards from Routine Use or Upsets/Accidents	Less than Significant	Same	Reduced
3.8.2	Hazardous Materials Near Schools	Less than Significant	Same	Reduced
3.8.3	Hazardous Materials Sites	None	Same	Same
3.8.4	Airport Hazards	Less than Significant	Same	Reduced

Impact No.	Impact	Impacts of Proposed Program (pre-mitigation)	Impacts of No Program Alternative	Impacts of Thirty-Three Percent Reduced Herd (pre-mitigation)
3.8.5	Emergency Response/Evacuation Plans and Wildland Fires	Less than Significant	Same	Reduced
HYDROLOGY/WATER QUALITY				
3.9.1	Violation of Water Quality Standards or Waste Discharge Requirements	Significant	Increased	Reduced
3.9.2	Depletion of Groundwater Supplies or Interference with Groundwater Recharge	Significant	Same	Reduced
3.9.3	Drainage Pattern Alterations Causing Erosion or Siltation	Less than Significant	Same	Reduced
3.9.4	Drainage Pattern Alterations or Runoff Causing Flooding or Pollution	Less than Significant	Same	Reduced
3.9.5	Flood Hazards or Dam or Levee Failures	Less than Significant	Same	Reduced
3.9.6	Seiche, Tsunami, Mudflow Impacts	None	Same	Same
LAND USE/POPULATION/HOUSING				
3.10.1	Division of an Established Community	None	Same	Same
3.10.2	Existing Plans and Policies Compliance	Less than Significant	Same	Same
3.10.3	Habitat Conservation Plan Conflicts	Less than Significant	Same	Same
3.10.4	Population and Housing	Less than Significant	Same	Reduced
NOISE				
3.11.1	Construction Noise, Groundborne Vibration	Less than Significant	Same	Reduced
3.11.2	Operational Noise	Significant	Same	Reduced
3.11.3	Exposure to Airport Noise	Less than Significant	Same	Reduced

Impact No.	Impact	Impacts of Proposed Program (pre-mitigation)	Impacts of No Program Alternative	Impacts of Thirty-Three Percent Reduced Herd (pre-mitigation)
PUBLIC AND UTILITY SERVICES				
3.12.1	Public Services Facilities	Less than Significant	Same	Reduced
3.12.2	Exceedance of Regional Water Quality Control Board Wastewater Requirements	Refer to Impact #3.9.1		
3.12.3	Storm Water Drainage	Refer to Impacts #3.9.3 and 3.9.4		
3.12.4	Sufficient Water Supplies	Refer to Impact # 3.9.2		
3.12.5	Wastewater Treatment Provider Capacity	None	Same	Same
3.12.6	Solid Waste	Less than Significant	Same	Reduced
RECREATION				
3.13.1	Recreational Facilities	Less than Significant	Same	Reduced
TRANSPORTATION/TRAFFIC				
3.14.1	Performance of Circulation System	Less than Significant	Increased	Reduced
3.14.2	Change of Air Traffic Patterns	None	Same	Same
3.14.3	Increase Road Hazards	Less than Significant	Same	Reduced
3.14.4	Emergency Access Interference	None	Same	Same
3.14.5	Other Transportation Mode Conflict	Less than Significant	Same	Reduced
3.14.6	Accelerated Road Deterioration	Significant	Increased	Reduced

CHAPTER SIX

OTHER MANDATORY CEQA SECTIONS

CHAPTER SIX – OTHER MANDATORY CEQA SECTIONS

6.1 Growth Inducement

Section 15126.2(d) of the *CEQA* Guidelines requires that *EIRs* provide a discussion of the "growth inducing impacts of the proposed project." Growth inducing impacts could be caused by projects that foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Growth inducing impacts can also be caused by removing obstacles to population growth, such as an expansion of a wastewater treatment plant. Growth inducement impacts can result from population increases that require the construction of new community services facilities.

In 2013 there were 302 dairies and 28 feedlots providing employment for just over 4,900 Tulare County residents. Over the next 10 years the demand for dairy products is expected to grow, resulting in a projected 16% increase in employees from 4,900 to approximately 5,700 by 2023. Continued development of new or expanded dairy facilities is not likely to result in or contribute to population growth inducement, in that it will be located in a County with high unemployment, most likely a rate exceeding 12% in 2023.¹ Jobs associated with new and expanded dairies and other bovine facilities would serve to alleviate the high unemployment problem rather than contribute to population growth inducement. Employment or housing growth associated with the proposed Program would not directly or indirectly result in significant population growth.

6.2 Significant and Unavoidable Impacts

Based on the analysis in Chapters 3 and 4 of this *EIR*, implementation of the proposed Program would result in significant and unavoidable impacts listed below. As required by *CEQA* Guidelines Section 15126.1(c), significant and unavoidable impacts listed in this table are described in further detail in Chapters 3 and 4.0.

▪ Air Quality:

- Impact #3.3.1 – Conflict With or Obstruct Implementation of any Applicable Air Quality Plan
- Impact #3.3.2 – Cause a Violation of any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation
- Impact #3.3.3 – 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

▪ Biological Resources:

- Impact #3.4.1 – Substantial Adverse Effect on Special-status Species
- Impact #3.4.2 – Substantial Adverse Effect on any Riparian Habitat or Other Sensitive Community
- Impact #3.4.3 – Substantial Adverse Effect on Wetlands and Jurisdictional Waters

- Impact #3.4.4 – Substantially Interfere with the Movement of Fish or Wildlife Corridors, or Disturb Wildlife Nursery Sites
- **Greenhouse Gases:**
 - Impact #3.7.1 – Increase in *GHG* Emissions Compared to Existing Conditions
 - Impact #3.7.2 – Inconsistent with Tulare County’s General Plan Climate Action Plan or *TCAG’s RTP/SCS*
 - Impact #3.7.3 – Inconsistent with the State’s Ability to Achieve *AB 32, EO B-30-15, and S-3-05* Emissions Reductions Targets
- **Hydrology/Water Quality:**
 - Impact #3.9.1 – Violation of Water Quality Standards or Waste Discharge Requirements
 - Impact #3.9.2 – Depletion of Groundwater Supplies or Interference with Groundwater Recharge
- **Noise:**
 - Impact #3.11.2 – Operational Noise
- **Transportation/Traffic:**
 - Impact #3.14.6 – Accelerated Road Deterioration

Cumulative impacts: cumulative impacts for the following resource categories cannot be reduced to less than significant levels, and therefore remain significant and unavoidable:

- Aesthetics
- Air quality
- Biological resources
- Cultural Resources
- Greenhouse gases
- Hydrology/water quality/water supply
- Noise
- Transportation

6.3 Significant Irreversible Environmental Changes

Dairy and other bovine facility growth allowed under the proposed Program would irreversibly commit nonrenewable resources to the construction and maintenance of buildings and infrastructure. These non-renewable resources include mining resources such as sand, gravel, steel, lead, copper and other metals.

Also, dairy and other bovine facility growth allowed under the proposed Program represents a long-term commitment to the consumption of fossil fuels. Increased fossil fuel usage would be associated with construction, lighting, heating and cooling, and transportation.

REFERENCES

¹ The average number of employees per dairy is 16. Rob Vandehuerel, General Manager, Milk Producers Council, email response, July 3, 2014.

CHAPTER SEVEN

PERSONS PREPARING EIR

CHAPTER SEVEN – PERSONS PREPARING EIR

County of Tulare

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County Project Manager

Jason LoBue
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Project Planner

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- Dairy/Other Bovine Facility Locations

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Analyst
Geographic Information Systems II

- DEIR Graphics

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Harry A. Tow
Principal Planner

- Project Manager
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- Hazardous Materials
- Hydrology/Water Quality
- Transportation/Traffic

Roger Richards
Senior Environmental Planner

- Greenhouse Gases
- Air Quality
- Cultural Resources
- Land Use/Population/Housing
- Public and Utility Services

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- Public Use/Population/Housing
- Noise
- Recreation

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- Dairy Operations

Gavin O’Leary
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- Graphics
- Dairy Site Locations

Castle Environmental Consulting, LLC

John Castleberry

Air Quality Report, March 2012

Insight Environmental Consultants

Matthew T. Daniel
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Air Quality Report, October 2015

Ramboll Environ U.S. Corporation
Los Angeles and San Francisco, CA

Julia Lester, Principal

Climate Action Plan, November 2015

Dawn Chianese, Manager

JD Consulting, Inc.

Jerry Dryer

Economic Report, November 2014

Tully & Young

Greg Young

Water Supply Assessment

APPENDICES (see enclosed cd)