DRAFT ENVIRONMENTAL IMPACT REPORT

GENERAL WASTE DISCHARGE REQUIREMENTS FOR COMPOSTING OPERATIONS

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ACRONYMS AND ABBREVIATIONS

AADT	average annual daily traffic
AQMD	Air Quality Management District
APCD	Air Pollution Control District
ARB	Air Resources Board
ASCE	American Society of Civil Engineers
BACT	best available control technology
BMP	best management practice
°C	degrees Celsius
Cal. Code Regs.	California Code of Regulations
CalEPA	California Environmental Protection Agency
CALFIRE	California Department of Forestry and Fire Protection
CalRecycle	Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CAT	Climate Action Team
CBC	California Building Code
CDC	Center for Disease Control
CDOC	California Department of Conservation
CDFA	California Department of Food and Agriculture
CDPH	California Department of Public Health
CEC	California Energy Commission
CEQA	California Environmental Quality Act; Public Resources Code section 21000 and following
CEQA Guidelines	California Code of Regulations, title 14, section 15000 and following
C.F.R.	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CHP	California Highway Patrol
cm/s	centimeters per second
CNDDB	California Natural Diversity Database
CO_1	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalents
Construction General Permit	National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities

CPUC	California Public Utilities Commission
CUPA	Certified Unified Program Agency
cy	cubic yards
dB	decibel
dBA	A-weighted decibel sound level
CUPA	Certified Unified Program Agency
DEM	digital elevation model
DFW	Department of Fish and Wildlife
DHS	Department of Health Services
DOF	Department of Finance
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EA	Enforcement Agency
EIR	Environmental Impact Report
DEM	digital elevation model
F	degrees Fahrenheit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHA	Federal Housing Administration
FMMP	Farmland Mapping and Monitoring Program
FPA	Z'Berg-Nejedly Forest Practices Act
FPP	Farmland Protection Program
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
GAMA	Groundwater Ambient Monitoring and Assessment Program
General Order	proposed General Waste Discharge Requirements for Composting Operations
General Industrial Permit	Industrial Storm Water General Permit Order 97-03-DWQ (new Industrial General Permit 2014-0057-DWQ will be effective July 1, 2015)
GHG	greenhouse gas
GIS	geographic information system
Gov. Code	Government code
GWP	global warming potential
HAP	hazardous air pollutant
HARP	Hot Spots Analysis Reporting Program
HDPE	high density polyethylene
Health & Saf. Code	Health and Safety Code (California)
HFC	hydrofluorocarbon

HFRA	Healthy Forests Restoration Act
hp	horsepower
HUD	United States Department of Housing and Urban Development
IBC	International Building Code
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
IS/MND	Initial Study/Mitigated Negative Declaration
LESA	Land Evaluation and Site Assessment
LOP	Local Oversight Program (counties)
LOS	Level of Service
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MRP	Monitoring and Reporting Program
MSL	mean sea level
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NED	National Elevation Dataset
NF_3	nitrogen trifluoride
NFMA	National Forest Management Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMHC	non-methane hydrocarbon
NOA	Notice of Applicability
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	oxides of nitrogen
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
NRHP	National Register for Historic Places
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
PFC	perfluorocarbon
PG&E	Pacific Gas and Electric Company
PM	particulate matter
$PM_{2.5}$	particulate matter, 2.5 micrometers or less
PM_{10}	particulate matter, 10 micrometers or less

ppm	parts per million
PPV	peak particle velocity
PSD	Prevention of Significant Deterioration
Pub. Resources Code	Public Resources Code
Regional Water Board	Regional Water Quality Control Board
REL	Reference Exposure Level
ROG	reactive organic gases
SB	Senate Bill
SDG&E	San Diego Gas and Electric Company
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
SO_x	oxides of sulfur
State Water Board	State Water Resources Control Board
SWIS	Solid Waste Information System
TAC	toxic air contaminant
THP	Timber Harvest Plan
TMDL	total maximum daily load
TPZ	timberland production zone
µm	micrometers
$\mu g/m^3$	microgram per cubic meter
USACE	United States Army Corp of Engineers
USBR	United States Bureau of Reclamation
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USEPA	United State Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
UST	underground storage tanks
V/C	volume-to-capacity ratio
VdB	vibration decibel
VOCs	volatile organic compounds
Water Code	California Water Code, division 7, Water Quality
WDRs	waste discharge requirements

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EXECUTIVE SUMMARY

INTRODUCTION

The State Water Resources Control Board (State Water Board) prepared this Draft Environmental Impact Report (EIR) to assess potential environmental effects that may result from adoption and implementation of the proposed General Waste Discharge Requirements for Composting Operations (General Order). Throughout the document, the adoption and implementation of the General Order will be referred to as the "proposed project" or "project."

The General Order being considered by the State Water Board will apply to composting operations that accept, store, and process materials to produce a compost product such as soil amendment, fertilizer, or soil blends. Acceptable materials would include green material (from residential curbside and landscape business), food material, vegetative food material, paper material, agricultural material, manures, and biosolids. These materials have the potential to affect the quality of waters of the state; as such, discharges from operations accepting these materials are prohibited without authorization from the Water Boards.

The General Order would establish a notification and permit review process for private and public entities or persons intending to compost for certain types of operations. The General Order includes two levels of compliance, Tier I and Tier II, based on types of feedstocks used, volume of compost on site, and hydrogeologic site conditions.

The General Order contains prohibitions, specifications, and general procedures to protect surface water and groundwater quality related to composting facility operations. If adopted, the General Order would specify the terms and conditions of discharges from composting operations.

Dischargers would request coverage under the General Order by submitting a Notice of Intent (NOI), a technical report, and the appropriate fees to the individual Regional Water Quality Control Board (Regional Water Board). The Regional Water Board would review the NOI and technical report, confirm that the individual composting operation met all of the terms and conditions of the General Order, and issue a Notice of Applicability (NOA).

Although a discharger may be eligible for coverage under the General Order, the appropriate Regional Water Board may determine that the discharge would be better regulated by individual WDRs or other regulatory mechanisms.

PROJECT OBJECTIVES

The project objectives include the following:

1. Protect water quality by adopting requirements consistent with provisions of the California Water Code, division 7 (Water Code) and related state water quality control plans and policies to ensure protection of beneficial uses of the state's waters from these operations.
2. Provide consistent state-wide regulatory requirements for composting operations.
3. Streamline the permitting process for composting operations that meet certain conditions.

4. Support California's diversion goal to recycle, compost or source reduce 75 percent of solid waste being disposed of in landfills by 2020 by diversifying the types of feedstocks allowed under the General Order.

SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATION MEASURES

The EIR identifies that the direct and indirect impacts of the General Order are primarily related to the reasonably foreseeable methods composting operations may utilize to comply with the General Order. Because the General Order would apply to both existing composting operations as well as new composting operations that might in the future enroll for coverage under the General Order, this EIR assesses the impacts from an existing composting operation due to retrofits for compliance, impacts that would occur from a new operation's compliance with the General Order, and impacts from new composting operations that are unrelated to the General Order.

Potential environmental impacts of the project are summarized in Table ES-1. Refer to Chapters 4 through 16 in this EIR for a complete discussion of each impact.

This presentation is necessarily at a generalized level of analysis as it would be speculative for the State Water Board to predict the actual choices for compliance at any specific location and estimate the magnitude of impacts for a site-specific composting operation within the state. Although the EIR analyzes whether the General Order might create new significant impacts at existing or new composting operations or increase the severity of the expected impacts of new composting operations, the General Order would not authorize, approve, permit, or in any way support the location, construction, or operation of a new composting operation (except as for compliance with the General Order). Therefore, although not connected to the State Water Board action, for disclosure purposes, the EIR also presents a discussion of the possible environmental impacts of new composting operations, unrelated to the General Order. Impacts of new composting operations, unrelated to the General Order are shown below in Table ES-1 in italicized text.

TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
4	**AESTHETICS**			
	Impact 4.1: Compliance with the General Order at composting operations is not expected to have a substantial adverse effect on a scenic vista.	None required, however, potential impacts may be further reduced by implementation of the following mitigation measures: • To the extent possible, install equipment and improvements within existing operation boundaries; • Where new structures or enclosures are necessary, avoid sky lining of structures or electrical lines; • Install privacy fencing and/or vegetative screening; • Schedule hours of operation to accommodate light and glare; • Design outdoor lighting to aim downward onto the project site and not glare skyward or onto adjacent parcels; • Locate and design improvements such as structures and roads to blend with existing visual environment, vegetation, and facilities.	LS	NA
	Impact 4.2. Compliance with the General Order at composting operations is not expected to substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	None required. See Mitigation Measure 4.1.	LS	NA
	Impact 4.3. Compliance with the General Order at composting operations is not expected to substantially degrade the existing visual character or quality of the site and its surroundings.	None required. See Mitigation Measure 4.1.	LS	NA
	Impact 4.4. Compliance with the General Order at composting operations is not expected to create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	None required. See Mitigation Measure 4.1.	LS	NA

Note: Italicized text refers to potential impacts of new compost operations that are unrelated to the General Order

LS – Less than Significant Impact LSM – Less than Significant Impact with Mitigation S=Significant Impact S&U – Significant and Unavoidable NA – Not Applicable

TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
4	**AESTHETICS**			
	Impact 4.5. *Development of new composting operations, unrelated to the General Order, may have the potential to have a substantial adverse effect on a scenic vista; substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.*	*None required, however, potential impacts may be further reduced by implementation of the following mitigation measures:* • *To the extent possible, install equipment and improvements within existing operation boundaries.* • *Where new structures or enclosures are necessary, avoid sky lining of structures or electrical lines.* • *Install privacy fencing and/or vegetative screening.* • *Schedule hours of operation to accommodate light and glare.* • *Design outdoor lighting to aim downward onto the project site and not glare skyward or onto adjacent parcels.* • *Locate and design improvements such as structures and roads to blend with existing visual environment, vegetation, and facilities.*	*S*	*S&U*

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
5	**AGRICULTURE AND FORESTRY**			
	Impact 5.1. Compliance with the General Order at composting operations may have the potential to result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.	Potential impacts may be reduced by implementation of the following mitigation measures: • To the extent possible, avoid siting new composting operations on Prime, Unique, or Important Farmland, or Williamson Act contract lands; • Secure appropriate land use permits from local jurisdictions prior to modification of existing composting operations or construction at new composting operations; • Plan and construct improvements in accordance with general plans, agriculture and forest lands preservation programs, and agriculture and forest lands conservation easements.	S	S&U
	Impact 5.2 Compliance with the General Order at composting operations may have the potential to conflict with existing zoning for agricultural use or a Williamson Act contract.	Mitigation Measure 5.2.: See Mitigation Measure 5.1.	S	S&U
	Impact 5.3. Compliance with the General Order at composting operations is not expected to result in conflict with existing zoning for, or cause rezoning of, forest land (Pub. Resources Code, § 12220, subd. (g)) or timberland (Pub. Resources Code, § 4526), or timberland zoned as Timberland Production (as defined by Government Code section 51104(g)).	None required. See Mitigation Measure 5.1.	LS	NA
	Impact 5.4. Compliance with the General Order at composting operations is not expected to result in the loss of forest land or conversion of forest land to non-forest use.	None required. See Mitigation Measure 5.1.	LS	NA

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
5	**AGRICULTURE AND FORESTRY**			
	Impact 5.5. Compliance with the General Order at composting operations is not expected to 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 forest land to non-forest use.	None required. See Mitigation Measure 5.1.	LS	NA
	Impact 5.6. *Development of new composting operations, unrelated to the General Order, may have the potential to result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agriculture use; conflict with existing zoning for agricultural use or a Williamson Act contract; conflict with existing zoning for or cause rezoning of forest land, timberland, or timberland zoned Timberland Production; loss of or conversion of forest land to non-forest use, or result in other changes which could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.*	*Mitigation Measure 5.6. The recognized practices listed in Mitigation Measure 5.1 may be implemented to reduce the impact of new composting operations, unrelated to the General Order.*	*S*	*S&U*

Note: Italicized text refers to potential impacts of new compost operations that are unrelated to the General Order

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
6	**AIR QUALITY AND GREENHOUSE GASES**			
	Impact 6.1. Compliance with the General Order at composting operations may have the potential to conflict with or obstruct implementation of an applicable air quality plan.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Apply for, secure, and comply with all appropriate air quality permits for project construction from the local agencies with air quality jurisdiction, and from other applicable agencies, if appropriate, prior to construction mobilization; • Comply with the federal Clean Air Act and the California Clean Air Act (e.g., New Source Review and BACT criteria, if applicable); • If located in PM non-attainment areas, prepare and comply with a dust abatement plan that addresses emissions of fugitive dust during construction and operation of the project; • Examples of specific mitigation measures include, but are not limited to: o Comply with the Off-Road Regulation for in-use off-road vehicles to meet DPM fleet averaging standards; o Use DPM filters to further reduce DPM tailpipe emissions from operation of diesel fueled equipment during construction. Cost effective mitigation options for reduction of PM emissions from diesel fueled engines are available and in use at construction and demolition operations; o Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (as required by the state airborne toxics control measure [Cal. Code Regs., tit. 13, §2485].). • Provide clear signage that posts this requirement for workers at entrances to the site.	S	S&U

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
6	**AIR QUALITY AND GREENHOUSE GASES**			
	Impact 6.2. Compliance with the General Order at composting operations may have the potential to violate air quality standards or contribute substantially to an existing or project air quality violation.	See Mitigation Measure 6.1.	S	S&U
	Impact 6.3 Compliance with the General Order at composting operations may have the potential to result in considerable net increase of any non-attainment pollutant for which the project region is under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Comply with the federal and California Clean Air Acts. New or modified facilities that install stationary engines to comply with the General Order would need to follow the local air district's New Source Review policy and all local air quality regulations. A new stationary engine would need a permit with the local air district to ensure that it meets all BACT requirements for districts in non-attainment areas and PSD for districts in attainment areas. Local air districts can limit the amount of operational hours to ensure emissions do not exceed significant levels; • Based on results of the environmental review, applicants would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen operation-related air quality impacts of the project. This could require purchase of offsets for pollutants that exceed threshold levels in the district; • Use electric engines where feasible; • Require diesel engines to be equipped with diesel particulate filters. •	S	S&U

Note: Italicized text refers to potential impacts of new compost operations that are unrelated to the General Order

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
6	**AIR QUALITY AND GREENHOUSE GASES**			
	Impact 6.4: Compliance with the General Order at composting operations may have the potential to lead to exposure of sensitive receptors in the vicinity of substantial pollutant concentrations from stationary and mobile sources.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • See Mitigation Measure 6.1; • If diesel particulate matter (DPM) is a major contributor, the operation may implement one or more of the following requirements, where feasible and appropriate; o Use either new diesel engines designed to minimize DPM emissions (usually through use of catalyzed particulate filters in the exhaust) or retrofit older engines with catalyzed particulate filters (which will reduce DMP emissions by 85 percent); o Use electric equipment powered by the grid, which would eliminate local combustion emissions; o Use alternative fuels, such as compressed natural gas or liquefied natural gas. • Follow proper safety protocol. Signage onsite could help to remind workers to follow procedure and minimize exposure risk.	S	S&U
	Impact 6.5. Compliance with the General Order at composting operations may have the potential to create objectionable odors affecting a substantial number of people.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Design operations in compliance with appropriate local land use plans, policies, and regulations, including applicable setbacks and buffer areas from sensitive land uses for potentially odoriferous processes; • Require Tier II operations to operate and maintain wastewater-holding facilities at or above a dissolved oxygen limit of 1.0 mg/L to prevent anaerobic conditions in wastewater; • Develop and comply with an Odor Impact Minimization Plan pursuant to the requirements of California Code of Regulations, title 14, section 17863.4.	S	S&U

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
6	**AIR QUALITY AND GREENHOUSE GASES**			
	Impact 6.6. Compliance with the General Order at composting operations may have the potential to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Use electric engines, if electricity is available at the site, to eliminate on-site GHG emissions from stationary engines that are required for water management and aeration; • Follow offset protocols to create carbon credits to balance emissions from stationary sources. Offset emissions would have to be real, verifiable, and permanent to qualify; • Fund local projects that result in GHG reductions and credit the carbon credits achieved to the operation; • Purchase available offset credits that were previously captured from another source and available for purchase in an approved carbon registry.	S	S&U
	Impact 6.7. Compliance with the General Order at composting operations may have the potential to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs.	See Mitigation Measure 6.6.	S	S&U

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
6	**AIR QUALITY AND GREENHOUSE GASES**			
	Impact 6.8. *Development of new composting operations, unrelated to the General Order, may have the potential to conflict with or obstruct implementation of the applicable air quality plan; violate any air quality standard or contribute substantially to an existing or projected air quality violation; result in a cumulatively considerable net increase of any non-attainment pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors); expose sensitive receptors to substantial pollutant concentrations; create objectionable odors affecting a substantial number of people; generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG policy or regulation adopted for the purpose of reducing GHG emissions.*	*See Mitigation Measures 6.1. through 6.6.*	*S*	*S&U*

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
7	**BIOLOGICAL RESOURCES**			
	Impact 7.1. Compliance with the General Order at composting operations may have the potential to 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 US Fish and Wildlife Service.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Preparation of a biological inventory of the site resources by a qualified biologist prior to ground disturbance or construction. If protected species or their habitats are present, comply with applicable federal and state endangered species acts and regulations. Ensure that important fish or wildlife movement corridors or nursery sites are not impeded by project activities; • Preparation of a wetland survey of onsite resources as required by USACE per section 303(d) of the Clean Water Code. Establish setbacks and prohibit disturbance of riparian habitats, streams, intermittent and ephemeral drainages, and other wetlands; • Prohibit construction activities during the rainy season with requirements for seasonal weatherization and implementation of erosion prevention practices; • Prohibit construction activities in vicinity of raptor nests during nesting season or establish protective buffers and provide monitoring as needed to ensure that project activity does not cause an active nest to fail; • Prepare site design and development plans that avoid or minimize disturbance of habitat and wildlife resources, as well as prevent storm water discharge that could contribute to sedimentation and degradation of local waterways; • Plant replacement trees and establish permanently protected suitable habitat at ratios considered acceptable to comply with “no net loss” requirements.	S	S&U

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
7	BIOLOGICAL RESOURCES			
	Impact 7.2. Compliance with the General Order at composting operations may have the potential to have a substantial adverse effect on riparian habitat, or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service.	See Mitigation Measure 7.1.	S	S&U
	Impact 7.3. Compliance with the General Order at composting operations may have the potential to have a substantial adverse effect on federally protected wetlands 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.	See Mitigation Measure 7.1.	S	S&U
	Impact 7.4. Compliance with the General Order at composting operations may have the potential to 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 impede the use native wildlife nursery sites.	See Mitigation Measure 7.1.	S	S&U
	Impact 7.5. Compliance with the General Order at composting operations may have the potential to conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance.	See Mitigation Measure 7.1.	S	S&U
	Impact 7.6. Compliance with the General Order at composting operations may have the potential to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan.	See Mitigation Measure 7.1.	S	S&U

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
7	**BIOLOGICAL RESOURCES**			
	Impact 7.7. *Development of new composting operations, unrelated to the General Order, may have the potential to 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 US Fish and Wildlife Service; have a substantial adverse effect on riparian habitat, or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service; have a substantial adverse effect on federally protected wetlands 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; 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 impede the use of native wildlife nursery sites; conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance; or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan.*	*See Mitigation Measure 7.1.*	*S*	*S&U*

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
8	**CULTURAL RESOURCES**			
	Impact 8.1. Compliance with the General Order at composting operations may have the potential to cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Retain a qualified archaeologist or cultural specialist to perform a cultural resources site survey; • Contact the State Historic Preservation Officer and federal lead agencies for coordination of Nation-to-Nation consultations with the Native American Tribes; • Consult a qualified paleontological resources specialist to determine whether paleontological resources would likely be disturbed in a project area on the basis of the sedimentary context of the area and a records search for past paleontological finds in the area. The assessment may suggest areas of high or known potential for containing resources. If the assessment is inconclusive, a surface survey is recommended to determine the fossil potential and extent of the pertinent sedimentary units within the project site. If the site contains areas of high potential for significant paleontological resources and avoidance is not possible, prepare a paleontological resources management and mitigation plan: • Consult established archaeological and historical records and conduct field survey the project site prior to construction.; • Consult with local Native American representatives as appropriate to obtain local knowledge of the project vicinity; • Prepare site development and grading plans that avoid disturbance of known cultural sites and/or documented sensitive areas. Project plans shall include appropriate measures to protect sensitive resources; • Retain a qualified archaeologist or Native American representative to monitor site development activities, such as grading and trenching. If artifacts are observed during construction, require that construction be halted until a qualified archaeologist has been consulted; • Alert workers to the possibility of encountering human remains during construction activities, and prepare appropriate procedures. It is usually required that all construction activities near the location of identified human skeletal remains are halted until proper consultation and mitigation is arranged.	S	S&U

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
8	**CULTURAL RESOURCES**			
	Impact 8.2. Compliance with the General Order at composting operations may have the potential to cause a substantial adverse change in the significance of archaeological resource pursuant to § 15064.5.	See Mitigation Measure 8.1.	S	S&U
	Impact 8.3. Compliance with the General Order at composting operations may have the potential to directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature.	See Mitigation Measure 8.1.	S	S&U
	Impact 8.4. Compliance with the General Order at composting operations may have the potential to disturb human remains, including those interred outside formal cemeteries.	See Mitigation Measure 8.1.	S	S&U
	Impact 8.5. *Development of new composting operations, unrelated to the General Order, may have the potential to cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines section 15064.5; cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines section 15064.5; directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or disturb any human remains, including those interred outside of formal cemeteries.*	See Mitigation Measure 8.1.	S	S&U

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
9	**GEOLOGY, SOILS, AND MINERALS**			
	Impact 9.1: Compliance with the General Order at composting operations may have the potential to expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death from: • 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; • Strong seismic ground shaking; • Seismic-related ground failure, including liquefaction; • Landslides.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Modifications to existing composting operations or construction of new operations, should be sited, designed, and constructed in compliance with state and local seismic design regulations; • Composting operation modifications should be constructed to withstand the effects of ground shaking, liquefaction, and lateral spreading; • Retaining structures in particular should be designed and constructed in accordance with state of practice relevant seismic regulations; • Composting operations should implement an earthquake safety and response program; • In the event of a large earthquake event (i.e., magnitude 5.0 or greater within 50 miles of the project site), all project structures and features should be inspected for damage, as soon as is possible. Damaged structures or features should be closed to staff and public until such features or structures have been evaluated and/or repaired.	S	S&U

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9	**GEOLOGY, SOILS, AND MINERALS**			
	Impact 9.2. Compliance with the General Order at composting operations may have the potential to result in substantial soil erosion or loss of topsoil.	Examples of practices that may be implemented to avoid or minimize soil erosion or loss of topsoil include: • Implement Storm Water Pollution Prevention Plan by a Qualified Storm Water Pollution Plan Developer (QSD); • Schedule construction work for the dry season • Limit development on portions of a site while leaving the remaining land in a natural undisturbed condition; • promote natural vegetation by using parking lot islands and other landscaped areas; • Limit clearing and grading of native vegetation at a site to the minimum amount needed; • Grade only areas that are going to be immediately worked on. Leave natural vegetation as long as possible; • Promote use of native vegetation and revegetation: existing native vegetation requires the least care of any planting materials. Native plants may require little or no watering or fertilizer and grow on difficult sites; • Implement BMPs such as covering stockpile materials, installation of silt fences and fiber rolls, to reduce or eliminate discharge of soil, surface water runoff and pollutants during all excavation, grading, trenching, repaving or ground-disturbing activities; • After a large storm or rainfall event (i.e., ≥ 1" in 24 hours), inspect all project structures and features for damage, as soon as possible after the event. Any damaged structures or features will be closed to staff and the public until evaluated and/or repaired. .	S	S&U

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
9	**GEOLOGY, SOILS, AND MINERALS**			
	Impact 9.3. Compliance responses to the General Order at composting operations may have the potential to be located on a geologic unit or soil that is unstable or that would become unstable because of the project and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	• Preparation of site-specific and geotechnical engineering reports by licensed professionals to evaluate identify weak and less competent soil conditions and recommend site specific mitigation. The geotechnical professional recommendations may include: o Siting improvements away from sensitive soils; o Soil amendment to improve soil strength and cohesion properties; o Removal of unstable soil; o Allowable slope gradients to reduce landslide and lateral spread potential; o Site grading and drainage recommendations. • Grading should be conducted in accordance with relevant state and local regulations and recommendations of a geotechnical report.	S	S&U
	Impact 9.4. Compliance responses to the General Order at composting operations may have the potential to be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) that would create substantial risks to life or property.	See Mitigation Measure 9.3	S	S&U
	Impact 9.5. Compliance responses to the General Order at composting operations may have the potential to have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.	The following practices may further reduce impacts from soils that are incapable of supporting septic tanks or alternative on-site waste water disposal systems. • Preparation of site-specific soil evaluation by licensed professionals to evaluate specific soil conditions and recommend appropriate options for waste water disposal; • Selection of appropriate design of alternative on-site systems that do not rely on site soils, or off-site disposal.	S	S&U

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9	**GEOLOGY, SOILS, AND MINERALS**			
	Impact 9.6. Compliance with the General Order at composting operations is not expected to 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.	None required.	LS	NA
	Impact 9.7. Compliance with the General Order at composting operations is not expected to 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.	None required.	LS	NA

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
9	***GEOLOGY, SOILS, AND MINERALS***			
	Impact 9.8. *Development of new composting operations, unrelated to the General Order, may have the potential to expose people or structures to potential adverse effects, including the risk of loss, injury, or death from 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, strong seismic ground shaking, seismic-related ground failure (including liquefaction), or landslides; result in substantial soil/erosion or loss of topsoil; be located on a geologic unit or soil that is unstable or that would become unstable because of the project and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; be located on expansive soils as defined in Table 18-1-B of the Uniform Building Code (1994) that would create substantial risks to life or property; or have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.*	*See Mitigation Measures 9.1 through 9.3, and 9.5.*	*S*	*S&U*
	Impact 9.9. *Development of new composting operations, unrelated to the General Order, is not expected to 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; or 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.*	*None required*	*LS*	*NA*

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
10	**HAZARDS AND HAZARDOUS MATERIALS**			
	Impact 10.1. Compliance with the General Order at composting operations may have the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Managing hazardous materials in accordance with established handling and disposal protocols, preparing spill cleanup plans, and providing necessary spill prevention and clean up equipment onsite; • Documenting the transport and disposition of hazardous materials in transport manifests; • Handling individual hazardous materials consistent with best management practices (BMPs); • Maintaining safe, secure, and appropriate storage facilities; • Restricting access to and use of hazardous materials to trained personnel.	S	S&U
	Impact 10.2. Compliance with the General Order at composting operations may have the potential to 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.	See Mitigation Measure 10.1.	S	S&U
	Impact 10.3. Compliance with the General Order at composting operations may have the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	See Mitigation Measure 10.1.	S	S&U

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10	**HAZARDS AND HAZARDOUS MATERIALS**			
	Impact 10.4. Compliance responses to the General Order at composting operations may have the potential to 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, may have the potential to create a significant hazard to the public or the environment.	Examples of recognized measures that are routinely required by regulatory agencies include: • Preclude expansion of existing or new construction at a property polluted with hazardous waste. Prior to design, the discharger should consult the list maintained by DTSC pursuant to Government Code section 65962.5 for all known hazardous waste sites statewide. DTSC manages the Hazardous Waste and Substances Sites (Cortese) List which may be used by the state, local agencies and developers for information about the location of hazardous materials release sites.: o Conduct a Phase I Environmental Site Assessment (Phase I) prior to final project design and any earth disturbing activities. The Phase I should be prepared by a Registered Environmental Assessor or other qualified professional to assess the potential for contaminated soil or groundwater conditions. The Phase I should include a review of federal, state, and local hazardous materials databases to identify hazardous waste sites at locations within a one-quarter mile radius of the project location. The Phase I should include a review of existing and past land uses through aerial photographs, historical records, interviews of property owners and/or operators, observations during a reconnaissance site visit, and review of other information that could identify contaminated soil or groundwater; o If existing soil or groundwater contamination is identified, or if the Phase I recommends further review, the applicant should conduct follow-up sampling to characterize the contamination and identify any remediation consistent with applicable regulations; o If no contaminated soil or groundwater is identified and the Phase I does not recommend any further investigation, then the discharger may proceed with final project design and construction.	S	S&U

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10	**HAZARDS AND HAZARDOUS MATERIALS**			
	Impact 10.5. Compliance with the General Order at composting operations may have the potential to result in a safety hazard for people residing or working in the project area for a project located within an area covered by 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.	• For any detention ponds within 5 statute miles of an airport's air operations area, the operator will notify the FAA Regional Airports Division office and the airport operator of the operation as early in the process as possible; Such modifications must receive an FAA Determination of No Hazard prior to project approval.	S	S&U
	Impact 10.6. Compliance with the General Order at composting operations may have the potential to result in a safety hazard for people residing or working in the project area for a project located within the vicinity of a private airstrip.	See Mitigation 10.5.	S	S&U
	Impact 10.7. Compliance with the General Order at composting operations is not expected to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	None required	LS	NA
	Impact 10.8. Compliance with the General Order at composting operations is not expected to 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.	None required	LS	NA
	Impact 10.9. Compliance with the General Order at composting operations may have the potential to generate vectors (flies, mosquitoes, rodents, etc.) to such an extent that the applicable enforcement agency determines that any of the vectors occur in numbers considerably in excess of those found in the surrounding environment, disseminate widely from the property, and cause harmful effects on the public health of the surrounding population.	• Implement California Code of Regulations, title 14, chapter 3.1, article 6, section 17867, which requires that "all activities shall be conducted in a manner that minimizes vectors, odor impacts, litter, hazards, nuisances, and noise impacts…" ; • Vector populations can be kept under control using best management practices, such as insect traps, chemical treatment, or minimizing stagnant waters.	S	S&U

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10	**HAZARDS AND HAZARDOUS MATERIALS**			
	Impact 10.10: *Development of new composting operations, unrelated to the General Order, may have the potential to: create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving release of hazardous materials into the environment; emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; 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, may have the potential to create a significant hazard to the public or the environment; result in a safety hazard for people residing or working in the project area for a project located within an area covered by 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; result in a safety hazard for people residing or working in the project area for a project located within the vicinity of a private airstrip; impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; 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; generate vectors (flies, mosquitoes, rodents, etc.) to such an extent that the applicable enforcement agency determines that any of the vectors occur in numbers considerably in excess of those found in the surrounding environment, disseminate widely from the property, and cause harmful effects on the public health of the surrounding population.*	See Mitigation Measures 10.1, 10.4, 10.5, and 10.9.	S	S&U

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
11	**HYDROLOGY AND WATER QUALITY**			
	Impact 11.1. Compliance with the General Order at composting operations may have the potential to result in violation of water quality standards or waste discharge requirements.	The following mitigation measures are included in the General Order: • Prohibit composting operations within 100 feet of the nearest surface water body or water supply well; • Design, construct, and maintain areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost to control and manage run-on and run-off resulting from a 25-year, 24-hour peak storm event; • Protect areas for receiving, processing, or storing feedstocks, additives, amendments, or compost from surface flows and inundation resulting from a 25-year, 24-hour peak storm event • Design and operate storm water detention pond, berm, drainage conveyance systems to contain 25-year, 24-hour peak storm event at a minimum; • Require low permeability surfaces for Tier II facilities drainage; • Prohibit storage, use, and land discharge of feedstock, additive, or compost stored, processed, or composted outside those areas allowed by the General Order; • Prohibit concentration of constituents in any detention pond that results in hazardous concentration levels; • Limit use, handling, storage, and processing of additives and amendments using a tiered approach to reduce risk and prevent conditions of pollution, contamination, or nuisance; • Require containment of all feedstocks, additives, amendments, and compost that are exposed to precipitation or run-on; • Require dischargers to submit a Notice of Intent, a technical report , a Water and Wastewater Management Plan; • Limit feedstock type and allowable volume; • Design areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost to facilitate drainage and minimize ponding and reliably transmit liquid to containment structure, and to prevent conditions that can result in contamination, pollution, or nuisance; • Minimize potential for piles of feedstocks, additives, amendments, or compost to be become over-saturated and generate leachate; • Equip detention ponds with a pan lysimeter ; • Require tier 2 operations to comply with additional design and construction requirements to further prevent leaching (low permeability working surfaces; low permeability and lined detention ponds equipped with pan lysimeter monitoring); • Maintain containment, control, and monitoring structures and monitoring systems in good working order.	S	LSM

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
11	**HYDROLOGY AND WATER QUALITY**			
	Impact 11.2. Compliance with the General Order at composting operations is not expected to 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).	None required.	LS	NA
	Impact 11.3. Compliance with the General Order at composting operations may have the potential to 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.	Requirements of the General Order to contain storm water on-site include the following: • Design, construct, and maintain areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost to control and manage run-on and run-off from a 25-year, 24-hour peak storm event; • Protect areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost from surface flows associated with a 25-year, 24-hour peak storm event from inundation by surface flow; • Design and operate the storm water detention pond, containment berm, and drainage conveyance systems to contain a 25-year, 24-hour peak storm event; Require low permeability drainage ditches for Tier II operations.	S	LSM
	Impact 11.4. Compliance with the General Order at composting operations may have the potential to 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.	The General Order requires management of drainage and surface water run-off. See Mitigation Measures 11.1, 11.3, and 11.5.	S	LSM

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
11	**HYDROLOGY AND WATER QUALITY**			
	Impact 11.5. Compliance with the General Order at composting operations may have the potential to create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.	The General Storm Water Permits require management of run-off water, including the following: • Preparation of a site-specific Storm Water Pollution Prevention Plan; • Preparation of hazardous material spill control and countermeasure programs; • Sampling, monitoring, and compliance reporting for storm water runoff; • Development and adherence to a Rain Event Action Plan; • Adherence to numeric action levels and effluent limits for pH and turbidity; • Monitoring of soil characteristics; • Mandatory training under a specific curriculum; • Mandatory implementation of best management practices, which could include, but would not be limited to: o Physical barriers to prevent erosion and sedimentation including setbacks and buffers, rooftop and impervious surface disconnection, rain gardens and cisterns, and other installations; o Construction and maintenance of sedimentation basins; o Limitations on construction work during storm events; o Use of swales, mechanical, or chemical means of storm water treatment during construction, including vegetated swales, bioretention cells, chemical treatments, and mechanical storm water filters; and o Implementation of spill control, sediment control, and pollution control plans and training.	S	LSM

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
11	**HYDROLOGY AND WATER QUALITY**			
	Impact 11.6. Compliance with the General Order at composting operations may have the potential to otherwise substantially degrade water quality.	The General Order contains requirements and prohibitions as listed in Mitigation Measures 11.1, 11.3, 11.4, and 11.5.	S	LSM
	Impact 11.7. Compliance with the General Order at composting operations is not expected to 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.	None required.	LS	NA
	Impact 11.8. Compliance with the General Order at composting operations may have the potential to place within a 100-year flood hazard area structures which would impede or redirect flood flows.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Identify the location of FEMA 100-year flood zones with respect to the composting operation, as required in the General Order; • Locate modifications outside FEMA 100-year flood zones. Avoid expansion into FEMA-defined 100-year flood areas; • For existing composting operations within 100-year flood zones: o Design modifications to withstand the effects of flooding using features such as elevated working surfaces and foundations, and site protection such as levees or other protective features; o Manage on-site drainage.	S	S&U

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
11	**HYDROLOGY AND WATER QUALITY**			
	Impact 11.9. Compliance with the General Order at composting operations may have the potential to 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.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Conduct a geotechnical engineering investigation for design and construction of ponds; • For large operations and large ponds, obtain permit from Department of Water Resources (DWR); • Dams should be designed and constructed to meet current industry standards and California DWR Division of Safety of Dam's regulations; • Perform consolidation grouting across the dam raise footprint to stiffen shallow rock layers; • Prior to placement of leveling concrete, excavate zones of localized poor quality rock and fill with dental concrete; • Install a seepage/leakage control and drainage system to reduce seepage through the dam foundation. • Construct a spillway; • Design the outlet works system in accordance with Division of Safety of Dams requirements for the reservoir evacuation in the event of a dam safety emergency; • Incorporate slope stability measures such as rock bolts or mechanically stabilized earth walls.	S	S&U
	Impact 11.10. Compliance with the General Order at composting operations may have the potential to create a significant risk of inundation by seiche, tsunami, or mudflow.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Conduct a site-specific investigation that includes identification of local conditions; • Design and construct modifications to withstand impacts of tsunami inundation, seiche waves, or mudslides in compliance with state and local seismic and wind design regulations; • Design containment structures such as ponds to reduce potential for seiche waves; • Develop an appropriate response plan to address the effects of a large earthquake event (i.e., magnitude 5.0 or greater within 50 miles of the project site), or strong wind event.	S	S&U

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
11	***HYDROLOGY AND WATER QUALITY***			
	Impact 11.11. *Development of new composting operations, unrelated to the General Order, may have the potential to violate any water quality standards or waste discharge requirements; 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; 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; 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; create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; otherwise substantially degrade water quality; 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; place within a 100-year flood hazard area structures which would impede or redirect flood flows; 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.*	See Mitigation Measures 11.3, 11.4, 11.5, 11.6, 11.8, 11.9, and 11.10.	*S*	*S&U*

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
12	**LAND USE/PLANNING AND RECREATION**			
	Impact 12.1. Compliance with the General Order at composting operations is not expected to physically divide an established community.	None required. The following actions may further reduce potential impacts: • Secure appropriate land use permits from local jurisdictions prior to construction of new or modification of existing composting operations; • Address potential issues such as excessive light, dust, or noise from equipment operations through conditional use permits or zoning ordinances; • Implement site-specific land-use mitigation measures including limiting hours of operation, incorporating fencing or vegetation barriers, and enclosure of structures.	LS	NA
	Impact 12.2. Compliance with the General Order at composting operations is not expected to 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.	None required. See Mitigation Measure 12.1.	LS	NA
	Impact 12.3. Compliance with the General Order at composting operations is not expected to conflict with an applicable habitat conservation plan or natural community conservation plan.	None required. See Mitigation Measure 12.1.	LS	NA
	Impact 12.4. Compliance with the General Order at composting operations is not expected to 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.	None required. See Mitigation Measure 12.1.	LS	NA

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
12	**LAND USE/PLANNING AND RECREATION**			
	Impact 12.5. Compliance with the General Order at composting operations is not expected to include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	None required. See Mitigation Measure 12.1.	LS	NA
	Impact 12.6. *Development of new composting operations, unrelated to the General Order, may have the potential to physically divide an established community; 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; conflict with an applicable habitat conservation plan or natural community conservation plan; 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; include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.*	*None required. See Mitigation Measure 12.1.*	*LS*	*NA*

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
13	**NOISE**			
	Impact 13.1. Compliance with the General Order at composting operations may have the potential to result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Comply with local plans, policies, and ordinances regarding acceptable noise and vibration levels; • Ensure noise-generating construction activities (including truck deliveries, rock drilling and blasting) are limited to the least noise-sensitive times of day (e.g., weekdays during the daytime hours) for projects near sensitive receptors; • Consider use of noise barriers, such as berms, to limit ambient noise at property lines, especially where sensitive receptors may be present; • Ensure all project equipment has sound-control devices no less effective than those on the original equipment; • All construction equipment used shall be adequately muffled and maintained; • Consider use of battery powered forklifts and other facility vehicles; • Ensure all stationary construction equipment (i.e., compressors and generators) is located as far as practicable from nearby sensitive receptors or shielded; • Properly maintain mufflers, brakes and all loose items on construction and operational-related vehicles to minimize noise and ensure safe operations; • Keep truck operations to the quietest operating speeds. • Use noise controls on standard construction equipment; shield impact tools; • Consider use of flashing lights instead of audible back-up alarms on mobile equipment; • Install mufflers on air coolers and exhaust stacks of all diesel and gas-driven engines; • Equip all emergency pressure relief valves and steam blow-down lines with silencers to limit noise levels. • Contain facilities within buildings or other types of effective noise enclosures; • Employ engineering controls, including sound-insulated equipment and control rooms, to reduce the average noise level in normal work areas.	S	S&U

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
13	**NOISE**			
	Impact 13.2. Compliance with the General Order at composting operations may have the potential to result in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.	See Mitigation Measures 13.1.	S	S&U
	Impact 13.3. Compliance with the General Order at composting operations may have the potential to result in substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	See Mitigation Measures 13.1.	S	S&U
	Impact 13.4. Compliance with the General Order at composting operations may have the potential to result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	See Mitigation Measures 13.1.	S	S&U
	Impact 13.5. Compliance with the General Order at composting operations may have the potential to expose people residing or working in the project area to excessive noise levels (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).	See Mitigation Measures 13.1.	S	S&U
	Impact 13.6. Compliance with the General Order at composting operations may have the potential to expose people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip).	See Mitigation Measures 13.1.	S	S&U

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
13	**NOISE**			
	Impact 13.7. *Development of new composting operations, unrelated to the General Order, may have the potential to exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies; exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels; substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; expose people residing or working in the project area to excessive noise levels (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); or expose people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip).*	*See Mitigation Measure 13.1.*	*S*	*S&U*

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
14	**POPULATION AND HOUSING**			
	Impact 14.1. Compliance with the General Order at composting operations is not expected to 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).	None required	LS	NA
	Impact 14.2. Compliance with the General Order at composting operations is not expected to displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.	None required	LS	NA
	Impact 14.3. Compliance with the General Order at composting operations is not expected to displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.	None required	LS	NA
	Impact 14.4. *Development of new composting operations, unrelated to the General Order, is not expected to 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); displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.*	*None required*	*LS*	*NA*

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TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
15	**PUBLIC SERVICES, UTILITIES AND ENERGY**			
	Impact 15.1. Compliance with the General Order at composting operations is not expected to result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, parks or other public facilities.	None Required	LS	NA
	Impact 15.2. Compliance with the General Order at composting operations may have the potential to exceed wastewater treatment requirements of the applicable Regional Water Board.	**Mitigation Measure 15.2.** Requirements and prohibitions of the General Order are expected to minimize impacts. • Implement Mitigation Measures listed in 11.1; • Develop, design, and construct wastewater treatment systems consistent with the wastewater treatment requirements of the applicable Regional Water Board; • Develop on-site systems (such as septic systems); • Transport wastewater to a wastewater treatment plant via trucks or sewer line. o Wastewater generated by composting operations may require pre-treatment to reduce biological oxygen demands or remove contaminants, for the wastewater treatment facility to meet the treatment/disposal requirements of the Regional Water Board.	S	LSM

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15	**PUBLIC SERVICES, UTILITIES AND ENERGY**			
	Impact 15.3. Compliance with the General Order at composting operations may have the potential to require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	Examples of measures that can be taken to potentially reduce impacts to wastewater treatment facilities include: • Develop, design, and construct wastewater treatment systems consistent with the wastewater treatment requirements of the applicable Regional Water Board; • Develop on-site systems (such as septic systems); • Design and operate storm water detention pond, berm, drainage conveyance systems to contain 25-year, 24-hour peak storm event at a minimum; • Maintain containment, control, monitoring structures and monitoring systems in good working order.	S	S&U
	Impact 15.4. Compliance with the General Order at composting operations may have the potential to require or result in construction and operation of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Implementing best management practices such as use of silt fences, straw wattles, and sand bags during construction; • Restrict construction activities to dry seasons; • Implement dust control measures during construction; • Build a construction entrance to prevent tracking by construction equipment entering roadways.	S	S&U
	Impact 15.5. Compliance with the General Order at composting operations is expected to have sufficient water supplies available to serve the project from existing entitlements and resources.	None required.	LS	NA

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
15	**PUBLIC SERVICES, UTILITIES AND ENERGY**			
	Impact 15.6. Compliance with the General Order at composting operations may have the potential to result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	See Mitigation Measure 15.3.	S	S&U
	Impact 15.7. Compliance responses to the General Order at composting operations are expected to be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.	None required.	LS	NA
	Impact 15.8. Compliance with the General Order at composting operations is expected to comply with federal, state, and local statutes and regulations related to solid waste.	None required.	LS	NA
	Impact 15.9. Compliance with the General Order at composting operations may have the potential to require or result in the construction of new sources of energy supplies or additional energy infrastructure capacity, the construction of which could cause significant environmental effects.	An example of a recognized and accepted measure that may be implemented is: • Use of diesel generators may be an option if the composting operation handles wastewater by pumping and storing in above-grade or underground tanks, or for pond aeration.	S	S&U
	Impact 15.10. Compliance with the General Order at composting operations is not expected to conflict with applicable energy policies or standards.	None required.	LS	NA

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
15	**PUBLIC SERVICES AND UTILITIES**			
	Impact 15.11. *Development of new composting operations, unrelated to the General Order, may have the potential to result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, parks or other public facilities; exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, result in the construction of new storm water drainage facilities or expansion of existing facilities; may not have sufficient water supplies available to serve the project from existing entitlements and resources, or need new or expanded entitlements; result in a determination by the wastewater treatment provider which 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; not be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; not comply with federal, state, and local statutes and regulations related to solid waste; result in the construction of new sources of energy supplies or additional energy infrastructure capacity the construction of which could cause significant environmental effects; and conflict with applicable energy policies or standards.*	*See Mitigation Measures 15.2. and 15.9.*	*S*	*S&U*

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
16	**TRANSPORTATION**			
	Impact 16.1. Compliance with the General Order at composting operations may have the potential to 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 and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Prepare a Construction Traffic Control Plan and a Traffic Management Plan; • Coordinate with the local public transit administration so that bus routes or bus stops in work zones can be temporarily relocated; • Minimize the number and length of access, internal, service and maintenance roads and use existing roads when feasible; • To the extent possible schedule truck trips outside of peak commute hours to avoid adverse impacts on traffic flow; • Use flaggers or warning signs to provide for safe ingress and egress to/from the project site. Identify road design requirements for any roads, and related road improvements; • If new roads are necessary, prepare a road siting plan, and consult standards contained in federal, state, or local requirements. The plans should include design and construction protocols to ensure roads will meet the appropriate standards and be no larger than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles); • Construct access roads to avoid or minimize impacts to washes and stream crossings, follow natural contours and minimize side-hill cuts; • Roads internal to a project site should be designed to minimize ground disturbance. Excessive grades on roads, road embankments, ditches, and drainages should be avoided, especially in areas with erodible soils.	S	S&U

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CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
16	**TRANSPORTATION**			
	Impact 16.2. Compliance with the General Order at composting operations may have the potential to 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 agency for designated roads or highways.	See Mitigation Measure 16.1.	S	S&U
	Impact 16.3. Compliance with the General Order at composting operations may have the potential to 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.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Notify the FAA Regional office as early in the development process as possible; • Avoid locating composting operations on airport property. FAA recommends that the airport operator monitor composting operations to ensure that steam or thermal rise does not affect air traffic in any way; • Off-airport composting operations should follow the minimum distance required by FAA; • Non-food waste such as leaves, lawn clippings, branches and twigs are not considered wildlife attractant.	S	S&U
	Impact 16.4. Compliance with the General Order at composting operations is not expected to substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or uncompetitive uses (e.g. farm equipment).	None Required.	LS	NA

Note: Italicized text refers to potential impacts of new compost operations that are unrelated to the General Order

LS – Less than Significant Impact LSM – Less than Significant Impact with Mitigation S=Significant Impact S&U – Significant and Unavoidable NA – Not Applicable

TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
16	**TRANSPORTATION**			
	Impact 16.5. Compliance with the General Order at composting operations may have the potential to result in inadequate emergency access.	Examples of recognized and accepted measures that are routinely required by regulatory agencies include: • Composting operations should have an approved emergency plan on site at all times, and the plan shall be updated as necessary; • Provide advanced notification to administrators of local police and fire stations, hospitals and of the timing, location, and duration of construction activities; • During construction, surrounding streets should be kept open, allowing adequate access for emergency vehicles.	S	S&U
	Impact 16.6. Compliance with the General Order at composting operations may have the potential to conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	See Mitigation Measure 16.1.	S	S&U
	Impact 16.7. Compliance with the General Order at composting operations may have the potential to create impacts to adjacent roadways.	See Mitigation Measure 16.1.	S	S&U

Note: Italicized text refers to potential impacts of new compost operations that are unrelated to the General Order

LS – Less than Significant Impact LSM – Less than Significant Impact with Mitigation S=Significant Impact S&U – Significant and Unavoidable NA – Not Applicable

TABLE ES-1. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER	IMPACT	MITIGATION MEASURES	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
16	**TRANSPORTATION**			
	Impact 16.8. *Development of new composting operations, unrelated to the General Order, may have the potential to cause 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 and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit; 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 agency for designated roads or highways; 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; substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); result in inadequate emergency access; conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities; or create impacts to adjacent roadways.*	*See Mitigation Measures 16.1 through 16.7.*	S	S&U

Note: Italicized text refers to potential impacts of new compost operations that are unrelated to the General Order

LS – Less than Significant Impact LSM – Less than Significant Impact with Mitigation S=Significant Impact S&U – Significant and Unavoidable NA – Not Applicable

AREAS OF CONTROVERSY

The General Order was developed with input from stakeholders, CalRecycle, and State Water Board and Regional Water Board staff. State Water Board held public informational meetings in northern and southern California, and presented working concepts for the General Order, including preliminary conditions and requirements, enrollment tiers, feedstock provisions, and allowable alternatives for compliance.

The State Water Board held a public scoping meeting for the Environmental Impact Report on August 23, 2013. At the scoping meeting, the public were asked to comment on specific topics that they felt should be discussed in the environmental analysis. The following issues were expressed in comment letters and comments provided during the meeting:

- Concerns that the hydraulic conductivity requirement for pad construction could potentially suppress the growth of new composting operations and cause some existing composting operations to go out of business.
- Concerns that some green waste materials currently received at composting facilities may be redirected to landfills or land application because of costs to comply with the General Order.
- Concerns with consistency with other applicable regulations and jurisdictions.
- Consider exempting existing composting operations.
- Consider analyzing alternatives in recognition that composting provides significant environmental benefits.

Stakeholder comments were generally supportive of the General Order. Some commenters encouraged action to provide uniform, consistent guidelines to composting operations including those in the early phases of planning and/or permitting. Controversy mainly centered on the potential costs of compliance. To address potential impacts of these concerns, the State Water Board considered economics and potential environmental effects as discussed in Chapter 3 and included in Appendix D. The issues raised were acknowledged and considered during development of the General Order requirements.

ALTERNATIVES

The purpose of the alternatives analysis in an EIR is to describe a range of reasonable alternatives to the project that could feasibly attain the objectives of the project, and to evaluate the comparative merits of the alternatives (CEQA Guidelines, § 15126.6, subd. (a).). Additionally, CEQA Guidelines section 15126.6. subd. (b) requires consideration of alternatives that could avoid or substantially lessen any significant adverse environmental effects of the proposed project, including alternatives that may be more costly or could otherwise impede the project's objectives, and the No Project Alternative. The range of alternatives considered must include those that offer substantial environmental advantages over the proposed project and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological and legal factors.

The following alternatives were selected for analysis, and evaluated as discussed in Chapter 19:

- **No Project Alternative.** Under the No Project Alternative, the State Water Board would not develop general waste discharge requirements (WDRs) for composting operations. Existing composting operations without WDRs, including those operating under the expired conditional waiver, and new composting operations would be required to submit a Report of Waste Discharge to the relevant Regional Water Board for review and consideration. As part of that process, the discharger will be required to ensure CEQA compliance, presumably by providing the lead agency's appropriate environmental document to the Regional Water Board detailing site-specific impacts. The Regional Water Board would then issue individual WDRs and monitoring and reporting programs (MRPs), as appropriate, based on the information and level of protection needed.
- **Tier II Facilities - Increase Hydraulic Conductivity Pad Requirement Alternative.** For Tier II facilities, the Increase Hydraulic Conductivity Pad Requirement Alternative would replace the General Order's hydraulic conductivity requirement of 1.0×10^{-5} cm/s or less for a pad with a more permeable requirement, such as 1.0×10^{-4} cm/s or 1.0×10^{-3} cm/s.
- **Tier II Facilities - Groundwater Protection Monitoring in lieu of Hydraulic Conductivity Requirement for Pond Alternative.** The Groundwater Protection Monitoring in lieu of Hydraulic Conductivity Requirement for Pond Alternative would allow dischargers at Tier II facilities to choose whether to construct the pond per the hydraulic conductivity requirements or demonstrate through monitoring that the groundwater has not been impacted by their operations.

The analysis of the alternatives found that for Tier II facilities, the Groundwater Protection Monitoring in lieu of Hydraulic Conductivity Requirement for Pond alternative could potentially have fewer impacts than the proposed project in some environmental resource areas, due to fewer construction activities, and could meet three of the project objectives. This alternative is based on the premise that, as long as groundwater monitoring shows no impact to water quality, then the environmental impacts would be less than the project.

However, this alternative is a reactive approach that may ultimately have a greater adverse effect on water quality, particularly in areas underlain by granular soil, fractured rock and/or shallow groundwater. As discussed in Chapter 11, wastewater contained within a detention pond is high in nutrients, metals, salts, pathogens, oxygen-reducing compounds, and other constituents of concern which have the potential to degrade surface waters or groundwater. The force, or "head" imposed on the pond surface is constant; therefore an unlined pond is continually subjected to potential seeps or leaks.

Under the Groundwater Protection Monitoring alternative, if monitoring indicates a release resulting in degradation or pollution to waters, the operation would be required to implement corrective action measures. Corrective action measures may include but not be limited to activities such as pumping and treating the groundwater and/or building an impervious surface, which could potentially have greater environmental and economic impacts than containing wastewater within a lined detention pond.

Additionally, corrective action after a release of waste constituents may not reverse the effects of degradation or pollution for an unknown period of time, thus the environmental impact of the

Groundwater Protection Monitoring alternative would be greater than the Hydraulic Conductivity Requirement for Pond alternative. Installation of a geosynthetic liner to meet the hydraulic conductivity requirement for a detention pond is an example of a proactive approach to protecting groundwater from direct application of wastewater onto land.

1. INTRODUCTION AND BACKGROUND

The State Water Board is proposing to adopt a General Order for General Waste Discharge Requirements for Composting Operations (General Order). The General Order in its entirety is included as Appendix A.

The State Water Board and Regional Water Boards are the principal agencies with primary responsibility for coordination and control of water quality in the state as provided by Water Code section 13001.

Water Code section 13260 requires a person discharging waste or proposing to discharge waste that could affect water quality, to file a report of the discharge with the Regional Water Board. Based on review of the report of waste discharge, the Regional Water Board prescribes waste discharge requirements (WDRs) for the protection of water quality (Wat. Code, § 13263), that implement water quality control plans (Basin Plans) and take into consideration the beneficial uses to be protected and the water quality objectives reasonably required for that purpose, and the need to prevent nuisance.

The State or Regional Water Boards may issue general orders to authorize certain types of similar discharges based on the proposed discharge meeting certain criteria and conditions. The issuance of WDRs or general orders is considered a “permit action”, and may trigger the need for compliance with the California Environmental Quality Act (CEQA).

Composting is the biological decomposition of organic materials by microorganisms under controlled aerobic conditions to create a product (e.g. soil amendment, fertilizer, soil blend, etc.). Organic materials comprise a wide range of material types: grass, leaves, branches, prunings, stumps, wood waste, agricultural wastes, manure, food, and biosolids. Compost can be a valuable soil amendment that improves soil tilth and plant health, increases soil water holding capacity, reduces runoff, adds beneficial microorganisms, adds organic matter, and helps to sequester carbon.

The storage and processing of these organic materials at composting facilities typically occurs on open and uncovered land that is exposed to precipitation; however, some composting activities are within structures and protected from precipitation. Composting materials may contain nutrients, metals, salts, pathogens, and oxygen-reducing compounds that can degrade or pollute water quality if run-off or waste water is allowed to migrate into groundwater and/or surface water. The process of composting can allow contaminants to migrate with leachate or storm water that contacts these materials.

For purposes of the General Order, “Composting operations” are defined as the area at which operations are conducted, including the receiving area, pre-processing, processing, curing and storage areas, detention ponds, and other areas associated with the production of compost including storage areas for feedstock additives or amendments.

The General Order being considered by the State Water Board will apply to composting operations that process more than 500 cubic yards (cy) of green material, food material, paper, agricultural material, manures, and biosolids treated by composting to produce a product. These materials could affect the quality of waters of the state; as such, the General Order would establish a notification and permit review process for private and public entities or persons performing composting operations.

The General Order contains prohibitions, specifications, and general procedures to protect surface water and groundwater quality. Once adopted, the General Order requires composting operations seeking coverage under the General Order to submit a notice of intent (NOI), technical report, and a fee to the individual Regional Water Board, where the Regional Water Board would confirm that the individual composting operation has met all of the terms and conditions of the General Order.

This EIR is being prepared in accordance with CEQA and the CEQA Guidelines for consideration of approval of the General Order. This chapter provides background information on composting operations, existing regulations for composting, purpose of the EIR, scoping process, public involvement, and organization of the EIR.

1.1. BACKGROUND ON COMPOSTING OPERATIONS

According to the Department of Resources Recycling and Recovery (CalRecycle), approximately 5.9 million tons of organic materials in California are currently processed by composting (Ken Decio of CalRecycle, personal communication, 2014). The state of California currently disposes of an estimated 35 million tons of waste annually in landfills, of which 32 percent is compostable. Mandates and goals implemented by CalRecycle have resulted in development of facilities or operations that handle this material, which includes composting, chipping and grinding, and land application. The number of these facilities is expected to increase in the future, in order to meet the goal to divert 75 percent of the wastes from landfills enacted under Assembly Bill No. 341 (2011–2012 Reg. Sess., chapter 476, Statutes of 2011.)

A composting operation typically consists of a receiving and storage area for receipt of incoming organic material; a pre-processing area where the organic material is prepared for composting; active composting area where the material is allowed to breakdown; curing area where the material goes to mature before sale; and final screening and storage area where the new compost product is prepared for sale (Figure 1-1).

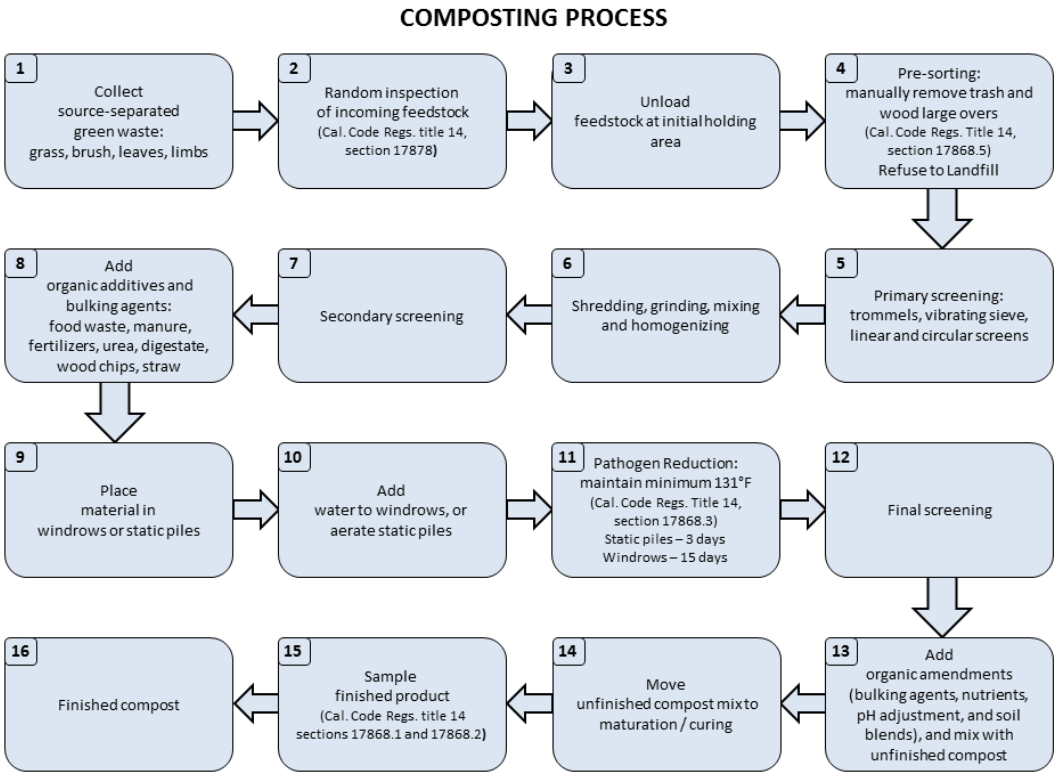


Figure 1-1 Composting Process Flow Diagram

Composting can be done on a small-scale, such as in backyards or community gardens, or on a large-scale, such as commercial facilities that handle high volumes. Composting traditionally occurs in open uncovered areas, however some facilities compost indoors within buildings. Composting technologies range in sophistication from open windrowing to aerated static piles based on the types of organic materials. The wetter and more heterogeneous the material is, the more sophisticated the technology must be to handle it. Two commonly used types of technologies are discussed below:

- Open windrow composting involves processing organic materials by either grinding or shredding, and forming it into long rows (windrows) up to 15 feet high and 18 feet wide with a triangular or trapezoidal cross section. The windrows are regularly turned with heavy equipment such as loaders or windrow turners, to mix and expose new surfaces to air to allow microorganisms in the material to convert the waste into compost. The windrows are also turned to ensure that the material reaches regulatory temperatures for the destruction of pathogens. The process takes approximately eight to twenty weeks, but may vary depending on climate.
- Aerated static pile composting typically involves processing organic materials by forcing air through a pile. This is accomplished by forming a windrow on top of perforated pipes or a perforated floor through which air is pushed through or vacuumed out. A breathable cover is

laid on top of the windrow that allows for the release of air pumped into the maturing material, retains odors typical of the process, and aids in reducing emissions that may affect air quality. The cover also protects the material from rainfall, ensuring the compost does not get too wet, creating excess leachate. The cover is breathable to water vapor and allows transpiration of moisture from the material. The windrow is not turned. The process takes eight to twenty weeks to produce compost.

A composting operation must allot sufficient space to the pre-processing, processing, and post-processing compost stages; the associated materials handling equipment and the movement thereof; and the aeration system to operate efficiently. Typically, the bulk of the site will be occupied by the composting operations pad. A variety of factors determines the dimensions of the composting area. Among them are the total volume of material to be processed, composting period, configuration of the windrows, nearby land uses and existing infrastructure.

Some common composting end products include: soil amendment, soil conditioner, fertilizer, and mulch. Compost products are primarily used in agriculture and horticulture; however, compost products may also be used for other purposes such as boiler fuel and alternative daily cover at landfills.

1.2. EXISTING REGULATIONS FOR COMPOSTING

No single agency regulates composting in California. Composting may involve environmental regulatory oversight by CalRecycle, Air Resources Board (ARB), the nine Regional Water Boards, local air quality management districts, and local land use planning agencies. CalRecycle is responsible for regulating composting under their Compostable Materials Handling Operations and Facilities regulation, California Code of Regulations, title 14, division 7, chapter 3.1, which requires applicants to submit a permit application under their tiered program. A local governing body may designate an Enforcement Agency (EA) at the local level to implement state law. CalRecycle must certify the EA. CalRecycle sets standards that are enforced by the EA to protect public health and safety. The California Air Resources Board (ARB) and local air quality management districts or boards regulate composting under each districts' permitting program. Each air quality management district sets standards and enforces regulations to protect air quality from composting. Local land use planning agencies may regulate specific site uses, including the land use designation, grading and other construction operations, and site design.

The State and Regional Water Boards have the authority to protect water quality, which includes regulating composting operations discharges and activities that have the potential to cause adverse water quality impacts. Over the years, regulation of composting operations by State and Regional Water Boards has progressed as follows:

- During the early 1990's, State Water Board staff developed standardized language for the then acceptable process of issuing a conditional waiver of WDRs for composting operations. A waiver was conditional in that:
    - Its applicability to a given discharge was contingent upon the discharge meeting, and continuing to meet, all terms and conditions listed in the waiver;
    - It could be terminated at any time;

- It did not authorize any discharge that was otherwise prohibited or regulated;
- It did not preclude the need for permits required by other local, state, or federal governmental agencies; and
- It did not preclude the Regional Water Board from taking enforcement actions for violations of terms and conditions set forth in the waiver of WDRs, or for any discharge/condition that either caused or threatened to cause a violation of provisions of the Basin Plan, or that created or threatened to create a condition of contamination, pollution, or nuisance.

- By 1996, this language was incorporated by most of the Regional Water Boards into region-specific conditional waivers of WDRs for composting operations, also known as the Green Waste Conditional Waiver. These conditional waivers addressed potential impacts to water quality from storage and treatment of various wastes by composting, including green, food processing, agricultural, and paper wastes, with a total on-site volume greater than 500 cubic yards (cy) at any given time;
- In 1999, the Water Code was amended to require waivers issued by the State and/or Regional Water Boards be terminated effective January 1, 2003 (see CA Water Code Sections 13269 and 13350; Senate Bill No. 390 (1999–2000 Reg. Sess.)). As a result of the Water Code amendments, many composting operations were issued individual WDRs;
- In 2009, the State Water Board, in consultation with CalRecycle, began developing regulatory concepts for water quality protection for composting operations. In August 2009, the State Water Board and CalRecycle held a joint public workshop to receive input on identifying potential water quality impacts from composting operations and appropriate water quality protection measures in light of possibly issuing a general order for waste discharge requirements for composting operations;
- Between August 2009 and May 2012, eleven informal stakeholder workgroups convened by the State Water Board were held. During this time, there were additional drivers motivating the development of a general WDR for composting operations:
  - Analysis of liquids from green waste and other composting operations for nutrients, metals, salts, pathogens, and oxygen-reducing compounds indicated that water quality protection measures in the original waiver needed to be upgraded to provide greater water quality protection (see Appendix J);
  - Due to the state's diversion goal, there was an expectation that the types of materials a composting operation may process would expand and, therefore, an interest in expanding the coverage for waste discharge to correspond to these new materials;
  - Individual WDRs for composting operations continue to require a significant investment of time by both the Water Boards and the dischargers. Therefore, a general WDR that can apply to a broad array of materials that could be composted at operations that meet certain criteria would streamline the regulatory process;
- In October 2012, a draft general order was proposed and an Initial Study/Proposed Mitigated Negative Declaration (IS/MND) was prepared. A Notice of Intent to Adopt the IS/MND was issued to notify the public that the IS/MND was available for public review.

Based in part on the comments received during this comment period, the IS/MND was not adopted;

- Between January 2013 and December 2014, the State Water Board revised the General Order and prepared an EIR for the revised General Order. Section 1.4, Scoping Process, describes the approach used to develop the General Order and EIR.

1.3. PURPOSE OF THE EIR

CEQA requires that state and local government agencies consider environmental consequences of projects over which they have discretionary authority before taking action on those projects (Pub. Resources Code, § 21000 et seq.). The EIR is an informational document which will inform public agency decision makers and the public generally of the potential significant environmental effects of a project, discuss possible ways to minimize significant effects, and describe reasonable alternatives to the project.

The project analyzed in this EIR is the State Water Board's discretionary action to adopt the General Order for the protection of water quality associated with composting. The State Water Board will prepare responses to comments received on this draft EIR in preparation of the Final EIR. The State Water Board will review the EIR before certifying it as meeting the requirements of CEQA. Once the EIR certified, it will be one of the factors considered by the State Water Board in making a decision regarding the adoption of the General Order.

1.4. SCOPING PROCESS

CEQA encourages a consultation or scoping process to help identify the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in an EIR, and to help resolve concerns of affected agencies and individuals (see for example, CEQA Guidelines Section 15083). The intent of the scoping process is to identify significant issues for study in the EIR and to determine the scope of the analysis of each issue. Scoping is designed to explore issues for environmental assessment to ensure that important considerations are not overlooked, and to uncover concerns that might otherwise go unrecognized. Scoping has allowed the State Water Board to make the EIR as complete and informative as possible for decision makers and those affected by the proposed action and its alternatives. This section describes the scoping activities sponsored by the State Water Board.

Although the State Water Board has been involved in informal scoping prior to the decision to prepare the EIR, the Notice of Preparation (NOP), which is required by CEQA, is the first formal effort to involve the public and interested agencies in the scoping process for preparation of the EIR. The NOP describes the proposed project or program, indicates the types of environmental effects that could result from implementation of the project, and announces the start of an EIR review process under CEQA. The NOP encourages public participation in the environmental evaluation.

On July 19, 2013, the State Water Board sent an NOP to more than 50 agencies and persons with potential interest in the project. Copies of the NOP were available for review at the State Water Board office. Additionally, the NOP was posted at the State Water Board webpage (http://www.swrcb.ca.gov/public_notices/comments/index.shtml) and an announcement of its

availability was forwarded to more than 900 individuals that subscribed to the electronic mailing list dedicated to information on the General Order. The State Water Board developed a mailing list of agencies and organizations interested in receiving the NOP and scoping meeting announcements. The list also was used to distribute the EIR. The NOP and distribution list for the NOP are included in Appendix B.

The State Water Board staff held a scoping meeting on August 23, 2013 in Sacramento, California to solicit input from agencies and interested parties on issues to be addressed in the EIR. The scoping meeting included a description of the meeting's purpose, proposed requirements, an overview of the environmental review process and preparation of the EIR, and a public comment period. Those in attendance made comments on issues related to the General Order's requirements.

1.5. PUBLIC INVOLVEMENT

The public is encouraged to continue to be involved in the CEQA process beyond the scoping efforts. This EIR is being circulated for public review and comment. In addition, the State Water Board will be conducting public meetings (workshop and hearing) on the EIR. Comments received at public meetings or received in written form will be considered in development of a final EIR. Once the final EIR has been circulated, the State Water Board will receive public testimony on the General Order before official action is taken upon its adoption or denial.

1.6. REPORT ORGANIZATION

The EIR is organized into the following chapters so that the reader can easily obtain information about the project and its specific environmental issues:

- Executive Summary presents a summary of the General Order, a description of impacts and mitigation measures presented in a table format, and impact conclusions.
- Chapter 1, "Introduction and Background," provides a brief overview of the EIR's purpose.
- Chapter 2, "Project Description," provides information on the project including location, objectives, technical, economic, and environmental characteristics, and intended uses.
- Chapter 3, "Impact Analysis Approach" discusses assumptions, parameters, and methodology used for analyzing potential impacts.
- Chapters 4 through16 provide discussion on environmental factors provided in the CEQA Guidelines' Environmental Checklist (Appendix G Environmental Checklist Form and Appendix F). Each of these chapters describes environmental settings, a range of potential impacts that would result from the General Order, and potential mitigation measures.
- Chapter 17, "Cumulative Impacts," summarizes cumulative impacts.
- Chapter 18, "Growth Inducing Impacts," summarizes growth inducing impacts.
- Chapter 19, "Alternatives Analysis," presents project alternatives (including the No-Project Alternative) and provides an evaluation of each alternative in comparison with the project.
- Chapter 20, "References," identifies documents used (printed references) and individuals consulted (personal communications) in preparation of the EIR.
- Chapter 21, "Document Preparation," lists individuals involved in preparing the EIR.

2. PROJECT DESCRIPTION

The State Water Board is proposing to adopt and implement a general order for composting operations (General Order). The Regional Water Boards have discretion whether to enroll dischargers in the General Order, site-specific WDRs, or another administrative mechanism.

This chapter provides a description of the project's proposed location, project objectives, overview of the General Order, project characteristics, agencies that will use this document, and anticipated conditions following adoption of the General Order. The full text of the General Order is contained in Appendix A.

2.1. PROJECT LOCATION

The State Water Board is proposing to adopt a General Order for composting operations throughout the state. Nine Regional Water Boards statewide have jurisdiction over separate regions of the state, based on watershed boundaries as shown in Figure 2.1.

Figure 2-1 Regional Water Board Watersheds

2.2. PROJECT OBJECTIVES

The objectives of the General Order are to:

1. **Protect Water Quality – As discussed in Chapter 1**, the State Water Board and Regional Water Boards are the principal agencies responsible for protecting groundwater and surface water quality in California. Materials processed via composting have the potential to affect water quality, primarily through leaching or run-off and, as such, the Regional Water Boards must adopt WDRs for these composting operation discharges consistent with provisions of the Water Code and related state water quality control plans and policies to ensure protection of beneficial uses of the state's waters. The General Order must comply with Water Code section 13263, which requires issuance of WDRs for projects that may affect waters of the state.
2. **Provide Consistent Statewide Regulatory Requirements** - The existing process of each Regional Water Board issuing individual WDRs for composting operations could lead to inconsistencies between regions that may affect the feasibility, operation, maintenance procedures, and costs. By having a general order, the potential for inconsistent regional permitting requirements is minimized.
3. **Streamline the Permitting Process for Composting Operations** – The current permitting process (individual review and issuance of WDRs and the corresponding CEQA environmental review requirements implemented by each Regional Water Board) requires a substantial expenditure of resources, for both the applicant and the Regional Water Board. A general order will provide a regulatory framework and templates of supporting permitting documentation that can be used by individual Regional Water Boards to act on applications filed by potential applicants in a manner that avoids or mitigates potentially significant environmental effects. A general order provides each Regional Water Board with objective screening criteria against which to evaluate each application, and through which routine composting operation projects can be expedited.
4. **Support California's Solid Waste Diversion Effort** - Assembly Bill No. 341 (2011–2012 Reg. Sess., chaptered Oct 6, 2011, chapter 476, Statutes of 2011) set a goal to recycle, compost or source reduce 75 percent of solid waste being disposed of in landfills by 2020. To achieve this goal, CalRecycle estimates 15 million tons of organic materials need to be recycled annually. A major strategy to achieving the goal is to expand and diversify the existing organics infrastructure to process different types of organic materials. A general order should accommodate a broad range of materials to meet the anticipated increase in permits for construction of new or expansions of existing operations.

2.3. OVERVIEW OF THE GENERAL ORDER

The General Order specifies facility design, operation and maintenance requirements to prevent discharge of wastes to surface water or groundwater from composting operations. Proposed requirements were developed based on review of the expired waiver, water quality data received from Regional Water Boards, literature review, and discussions with Regional Water Board staff, other regulatory agencies, and stakeholders.

Applicability

For the purposes of the General Order, the term “composting operation” means the area(s) at which operations are conducted, including the receiving area, pre-processing, processing, curing, storage, and other ancillary systems associated with production of compost. A “discharger” is any person who discharges waste that could affect the quality of waters of the state, and includes any person who owns a composting operation, or is responsible for the operation. The discharger would be legally responsible for implementing and complying with the General Order.

The General Order applies to a composting operation with the capacity to receive, process (active and curing), or store (final product) more than 500 cy at any given time. The General Order includes two levels, or tiers, of compliance based on types of feedstocks used, volume of compost on site, and hydrogeologic site conditions. Allowable feedstocks for Tier I and Tier II include the materials listed in Table 2-I below:

Table 2-1 Allowable Feedstocks

<table>
<tr><th>Allowable Tier I Feedstocks</th><th>Allowable Tier II Feedstocks</th></tr>
<tr><td>Agricultural materials</td><td>Food materials (non-vegetative)</td></tr>
<tr><td>Green materials</td><td>Biosolids (Class A, B, and/or EQ)</td></tr>
<tr><td>Paper materials</td><td>Manure</td></tr>
<tr><td>Vegetative food materials</td><td>Anaerobic digestate derived from the allowable Tier II feedstocks</td></tr>
<tr><td>Anaerobic digestate derived from allowable Tier I feedstocks</td><td rowspan="2">A combination of the allowable Tier I and Tier II feedstocks</td></tr>
<tr><td>A combination of the allowable Tier I feedstocks</td></tr>
</table>

The General Order does not authorize, approve, or permit, the construction of a particular composting operation.

To apply for coverage under the General Order, a discharger would submit a Notice of Intent (NOI), a technical report, and filing fee to the appropriate Regional Water Board. A complete NOI and technical submittal provides the Regional Water Board with specific information related to the composting operation, including, but not limited to:

- Contact person and company;
- Project location;

- Map showing site topography and elevation; receiving, processing, and storage areas; nearby residences, roads, surface waters, and groundwater wells;
- Description of design and/or construction information for working surfaces, berms, and ditches, including hydraulic permeability, materials used, and slope;
- Description of how the wastewater is collected, stored, handled, or disposed; and
- Description of the composting method used.

The Regional Water Board would then review the information in the NOI to confirm that it met the General Order requirements and issue a Notice of Applicability (NOA) along with monitoring requirements. Composting operations that do not meet the criteria under the General Order may still apply for coverage under individual WDRs from the Regional Water Board.

Under the General Order, an annual filing fee is required each year, the fee amount based on threat to water quality and complexity, as specified in the California Code of Regulations, title 23, section 2200. Threat to Water Quality and Complexity categories are defined as follows:

<u>THREAT TO WATER QUALITY</u>

- Category 1 – Those discharges of waste that could cause the long-term loss of a designated beneficial use of the receiving water. Examples of long-term loss of a beneficial use include the loss of drinking water supply, the closure of an area used for water contact recreation, or the posting of an area used for spawning or growth of aquatic resources, including shellfish and migratory fish.
- Category 2 – Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.
- Category 3 – Those discharges of waste that could degrade water quality without violating water quality objectives, or could cause a minor impairment of designated beneficial uses as compared with Category 1 and Category 2.

<u>COMPLEXITY</u>

- Category A – Any discharge of toxic wastes; any small volume discharge containing toxic waste; any operation having numerous discharge points and groundwater monitoring; or any Class 1 waste management unit.
- Category B – Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units.
- Category C – Any discharger for which waste discharge requirements have been prescribed pursuant to section 13263 of the Water Code not included in Category A or Category B as described above. Included are dischargers having no waste treatment systems or that must comply with best management practices, dischargers having passive treatment and disposal systems, or dischargers having waste storage systems with land disposal.

General Order Requirements

The General Order includes requirements for the discharge, design, construction, maintenance, notification and operation for all tiers, and additional design, construction, monitoring, reporting and operation requirements for Tier II facilities. Requirements are summarized below:

Design, Construction, and Operation

The General Order requires that surfaces supporting the compost operation for both tiers be capable of preventing degradation of waters of the state. Such structures will be required to be designed, constructed, and maintained to: (1) minimize ponding and impede vertical movement of liquid phase constituents of concern; (2) reliably transmit any free liquid laterally to a containment structure; and (3) minimize conditions that could cause a condition of contamination, pollution, or nuisance by requiring:

1. Specific design elements to manage all run-on, run-off, and precipitation from all operational and storage areas under a 25-year, 24-hour design storm event.
2. Drainage and conveyance ditches that must be sized to convey all precipitation and run-off from a minimum of 25-year, 24-hour design storm event. Drainage features must be properly sloped to prevent ponding and kept free and clear of debris. For Tier II facilities, ditches must also meet a hydraulic conductivity of 1.0×10^{-5} cm/s or less.
3. For Tier II facilities, working surfaces that must be capable of resisting damage from movement of mobile operating equipment and weight of piles, and have a hydraulic conductivity of 1.0×10^{-5} cm/s or less.
4. For Tier II facilities, meeting the hydraulic conductivity requirement in items 2 and 3 above through conducting groundwater protection monitoring in lieu of meeting hydraulic conductivity specifications for working surfaces and drainage features.

Hydraulic conductivity requirements in the General Order for working surfaces and pond liners were based on consideration of a range of soil types and percolation rates. Composting nutrient-rich feedstocks on coarse-textured soils where there are no barriers to soil-water movement has the potential to create elevated nitrate concentrations in groundwater. Therefore, the hydraulic conductivity for working surfaces was specified to be less than that of sand. Table 2-2 shows porosity and hydraulic conductivity for representative soil types.

Table 2-2 Porosity and Hydraulic Conductivity for Representative Soil Types

Material	Porosity (%)	Hydraulic Conductivity (K), cm/sec
Unconsolidated Deposits		
Gravel	25–35	1–100
Sand	30–45	10^{-4}–10^{-1}
Silt	35–45	10^{-6}–10^{-4}
Clay	40–55	10^{-9}–10^{-6}
Rocks		
Karst limestone	15–40	10^{-4}–10^{-1}
Limestone, nonkarst	5–15	10^{-6}–10^{-4}
Sandstone	10–25	10^{-7}–10^{-4}
Shale	0–10	10^{-11}–10^{-7}
Crystalline rock (fractured)	1–10	10^{-6}–10^{-4}
Crystalline rock (unfractured)	0–2	10^{-11}–10^{-9}

Note: Porosity is the ratio of pore volume to total volume
Hydraulic conductivity is the rate of flow in centimeters per second (cm/sec) per unit time per unit cross-sectional area. 1 cm/sec equals 23.62 inches per minute.
Source: Adapted from Schnoor 1996.

The General Order requires that the discharger submit a Water and Wastewater Management Plan that describes how wastewater will be managed. This plan will describe the design, operations, and maintenance of the systems, including water balance calculations and assumptions.

If a detention pond is part of the system, for Tier II composting operations only, it must be designed, constructed, operated, and maintained to a hydraulic conductivity of 1.0 x 10^{-6} cm/s or less; include a monitoring device; and be operated to maintain a dissolved oxygen concentration of at least 1.0 milligrams per liter (mg/L) to prevent anaerobic conditions. If a storage tank is used, it must comply with all federal, state, and local laws and regulations.

Monitoring

The General Order requires the discharger to conduct inspections of the composting operation and wastewater management systems. In addition, the following are the various sampling requirements for the constituents of concern:

- If a detention pond is used, quarterly monitoring of the liquid is required including for the following:
    - Field Parameters (pH, dissolved oxygen, electrical conductivity, temperature, turbidity);
    - General Parameters (total and fixed dissolved solids).
- If biosolids are used as a feedstock, annually monitoring is required for the following:
    - Dissolved Metals (Arsenic, Cadmium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium and Zinc)
- If groundwater protection monitoring is used, quarterly groundwater monitoring is required for the following:
    - Field Parameters (groundwater elevation, depth to groundwater, gradient, gradient direction, pH);

- o General Mineral and Parameters (total dissolved solids, nitrate as nitrogen, sodium, chloride and total coliform organisms.

Reporting

The General Order will require composting operations to submit an annual monitoring and maintenance report, a design report and construction quality assurance report prior to any new construction of working surfaces or water quality containment and monitoring structures, a final construction quality assurance report after construction is complete, and a site restoration plan. Additionally, the discharger will be required to report any violations, or significant changes to the operations, design, or construction of the facility.

2.4. PROJECT CHARACTERISTICS

CEQA requires that the EIR include a general description of the project's technical and environmental characteristics (CEQA Guidelines Section 15124). The General Order sets forth requirements for the protection of water quality from composting operations that, through compliance with those requirements, could cause a physical change to the environment. As such, the "project characteristics" are the standards required in the General Order and the reasonably foreseeable methods that Dischargers may use to satisfy the General Order's requirements. The project does not include the specific project features or site specific impacts of any new composting operation because the General Order does not authorize, approve, permit, or in any way support the construction of a particular composting operation. Approval of a specific composting operation would require a project-specific CEQA analysis performed by the appropriate lead agency.

The General Order regulates composting operation discharges that have the potential to affect waters of the state. Major composting processes that will need to be regulated include:

- Storage/receiving/handling areas;
- Processing materials via composting;
- Storage of cured and final compost products; and
- Wastewater generation and handling.

It is not possible to foresee with a reasonable level of certainty the exact actions that would be selected by specific Dischargers to comply with their respective obligations in a particular location. Therefore, the EIR presents an evaluation that describes reasonably foreseeable impacts, but does not speculate on all possible impacts that might occur from the methods that could be used at a particular site or project specific level. Depending on the location, individual operations may choose other methods that could result in different project impacts. For purposes of the EIR, the most likely methods of compliance were selected based on current industry practice.

The following methods for compliance have been selected as reasonably foreseeable actions and provide the basis for a reasoned, good-faith assessment of the potential significant environmental impacts of the General Order. The reasonably foreseeable compliance responses recognized by this analysis to have potential direct effects include:

- Upgrading or installing improved working surfaces (pad construction);
- Installing a groundwater protection monitoring system;
- Managing wastewater using:
  - Detention ponds,
  - Storage tanks,
  - Hauling to a municipal wastewater treatment facility,
  - Discharge to existing sewer systems, or
  - Wastewater treatment discharged under National Pollutant Discharge Elimination System (NPDES).
- Managing nuisance from ponds through aeration; and
- Upgrading run-off/run-on control systems such as construction of berms and ditches.

This EIR evaluates physical effects to the environment from construction and operational changes resulting from requirements imposed by the General Order. Construction of pads, detention ponds, berms/ditches, storage tank fields, or groundwater monitoring systems may involve the use of heavy equipment such as bulldozers, scrapers, earthmovers, compactors, graders, augers, excavators, loaders, dump-trucks, and water trucks. Traffic associated with construction activities depend on the complexity of the project, location, availability of materials, and project size.

Operational changes due to the General Order may include additional vehicle traffic from hauling wastewater for off-site treatment; additional staff to operate a wastewater treatment system; or addition of contracted staff to monitor ponds or groundwater protection systems. Hauling wastewater off-site typically involves use of 18-wheel semi-trucks carrying tanks up to 20,000 gallons. The number of vehicles depends on the amount of wastewater generated, which is based on the climate where the operation is located, and facility size. Other methods of hauling wastewater off-site that include additional staff are anticipated to range from 1 to 5 people that correspond to up to 5 personal vehicle trips per day.

2.5. AGENCIES THAT WILL USE THIS DOCUMENT

The State Water Board will use the EIR in considering whether to adopt the General Order. The State Water Board must review the EIR before certifying it as an adequate environmental evaluation under CEQA; once the EIR is certified; it will be one of the factors considered by the State Water Board in making a decision regarding the adoption of the General Order.

In addition, this EIR may be utilized by other entities in future CEQA decision–making. Although not responsible for the adoption of the General Order, it is expected that the lead agency may use the EIR as an element of the decision-making process when considering the site specific impacts of a particular composting operation. In addition, when a Regional Water Board receives an NOI filed by an individual requesting authorization to compost under the adopted Order, the Regional Water Board is expected to use the EIR along with the lead agency's

project-specific CEQA document to determine whether the composting operation falls within the scope of the General Order and this EIR.

2.6. ANTICIPATED CONDITIONS FOLLOWING ADOPTION OF THE ORDER

The environmental impact discussions contained in Chapters 4 through 16 are based on physical environmental conditions that existed at the time of the issuance of the NOP. As part of the impact analysis, it was assumed that municipalities would continue to generate organic materials, some of which would continue to be transported to and handled by composting operations. In addition, it was assumed that compost products would continue to be used beneficially as soil amendment or conditioner.

It is reasonably foreseeable that composting operations, to comply with the General Order may upgrade their operational surfaces or install a groundwater protection monitoring program, upgrade run-on and run-off control systems, or upgrade or install wastewater management systems. It is possible that some facilities may cease operations due to economic considerations related to additional costs to comply with the General Order. Due to increasing populations and waste generation, as well as increased support by state and local agencies to reduce waste stream to traditional landfills, it is likely that new composting operations will continue to be constructed in California.

Significant upgrades to existing operations or the construction of new operations would still require approval from local land use planning agencies. Such local land use planning agencies would likely act as lead agency for project-specific CEQA compliance. This EIR does not address these site-specific project approvals and will not change the CEQA compliance requirement for the project approvals.

This EIR's impact analysis is intended to address potential environmental impacts of the General Order at any locations in the state that are not exempt from the General Order. Therefore, the EIR also provides analysis for existing composting operations in the state prior to initiation of the General Order effort. This analysis contains as much information as is currently available, without being speculative.

3. IMPACT ANALYSIS APPROACH

The EIR presents the State Water Board's analysis of potential impacts on the physical environment that may result from adoption and implementation of the General Order. Project impacts are related to the potential environmental consequences resulting from actions that Dischargers are expected to take to comply with the General Order. As described in this chapter, facility or equipment upgrades or process changes are expected to occur for operations covered under the General Order, often within existing structures; these upgrades or process changes are expected to reduce composting operations' water quality impacts. Such actions may include upgrades to existing working surfaces, upgrades to storm water controls, and management of wastewater. The EIR also identifies potential mitigation that could feasibly be implemented to alleviate, minimize, or avoid any potentially significant environmental impacts.

3.1. SCOPE OF ANALYSIS

When taking a discretionary action, CEQA requires the State Water Board to conduct an environmental analysis of the reasonably foreseeable means of compliance with that rule or regulation (Pub. Res Code Section 21159; CEQA Guidelines, § 15187, subd. (a).). The analysis is required to include reasonably foreseeable environmental impacts of the methods of compliance, reasonably foreseeable feasible mitigation measures relating to those impacts, and reasonably foreseeable alternative means of compliance that would avoid or eliminate potential significant impacts. The analysis should not engage in speculation, nor is the detail of a project-level analysis required.

CEQA Guidelines section 15131, subdivision (a) also provides direction, and states that:

"An EIR may trace a chain of cause and effect from a decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes."

(CEQA Guidelines, § 15131, subd. (a).). Consistent with CEQA Guidelines section 15131, subdivision (a) and section 15187, the EIR impact analysis focuses on physical changes and consequent environmental impacts that could result from reasonably foreseeable compliance methods.

Section 3.2.4 presents the results of the economic analysis and provides support for the conclusion that it is unlikely that a large number of operations would close due to economic considerations related to additional costs to comply with the General Order. Therefore, the scope of the impact analysis does not include possible environmental impacts that could be caused by the closure of operations. In addition, the economic analysis does not indicate, and there is no substantial evidence on the record that would otherwise indicate, that compliance with the General Order would cause composting operations to raise fees to such an extent that it would trigger the need for composting sources to divert their composting to landfills or utilize other means to accommodate the composting source material.

Methods for compliance are actions undertaken by dischargers to satisfy the requirements, including actions that protect surface water and groundwater quality. For purposes of the EIR,

the most likely methods based on current industry practices are discussed in Chapter 2. Although there is no information on the record as to activities that could be implemented to comply with the General Order, and the General Order does not stipulate how a discharger must comply, individual dischargers may choose to implement other methods based on site-specific considerations.

In many cases future actions cannot be definitively predicted, and although CEQA allows forecasting, it discourages speculation. While foreseeing the unforeseeable is not possible, an agency must make a good faith effort to anticipate and assess potentially significant environmental impacts. If after thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact.

Because the General Order would apply to both existing composting operations as well as new composting operations that might enroll for coverage in the future, the EIR assesses both the impacts from an existing composting operation due to retrofits for compliance, as well as impacts that would occur from a new operation's compliance with the General Order. This analysis is necessarily at a generalized level as it would be speculative for the State Water Board to predict the actual choices for compliance at any specific location and estimate the magnitude of impacts for a site-specific composting operation within the state.

Although the EIR analyzes whether the General Order might create new significant impacts at existing composting operations or increase the severity of expected impacts of new composting operations, the General Order would not authorize, approve, permit, or in any way support the location, construction, or operation of a new composting operation (except as for compliance with the General Order). Therefore, although not connected to the State Water Board action, only for disclosure purposes, the EIR presents a discussion of the possible environmental impacts of new composting operations, unrelated to the General Order. Impacts of new composting operations, unrelated to the General Order, are presented in italicized text.

3.2. APPROACH TO IMPACTS AND MITIGATION MEASURES

The EIR evaluates potential adverse environmental effects of adoption and implementation of the General Order for the resources discussed in Chapters 4 through 16. Each chapter includes a discussion of existing environmental setting and regulatory requirements.

3.2.1. Baseline of Composting Operations

CEQA Guidelines section 15125, subdivision (a) states that the EIR must include a description of the physical environmental conditions as they exist at the time the notice of preparation was published. For purposes of the EIR's environmental analysis, existing conditions are characterized by available data at the time the NOP was released on July 19, 2013.

State Water Board staff worked with CalRecycle staff, and used their on-line Solid Waste Information System (SWIS) to identify 153 composting operations operating in California (Figure 3-1). Table 3-1 lists the number of operations operating in each region.

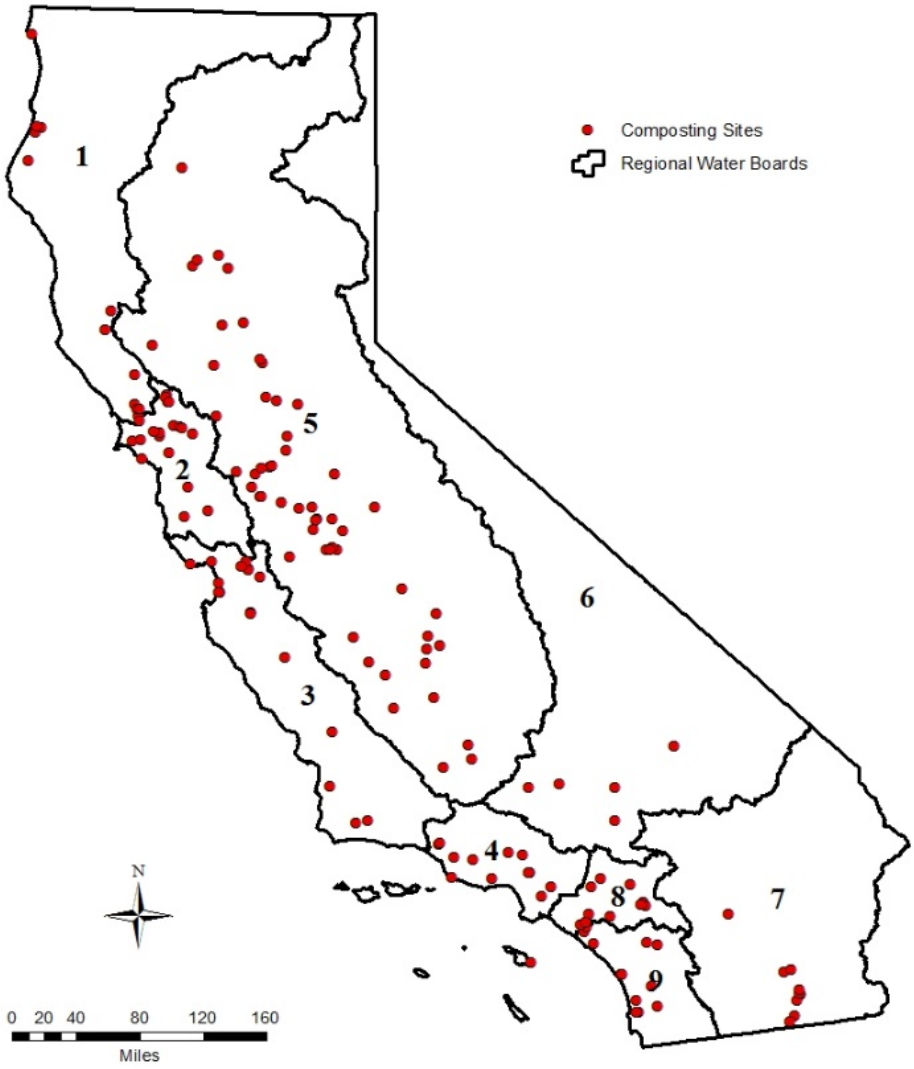


Figure 3-1 Locations of Existing Composting Operations in California

Table 3-1 Composting Operations per Region

Region	Number of Facilities
1 – North Coast	11
2 – San Francisco	19
3 - Central Coast	17
4 – Los Angeles	13
5F – Central Valley, Fresno	25
5R – Central Valley, Redding	5
5S – Central Valley, Sacramento	25
6 – Lahontan	4
7 - Colorado River	10
8 – Santa Ana	13
9 – San Diego	11
TOTAL	**153**

Construction and operations for each operation depends on numerous parameters including, but not limited to, local land use (e.g., urban, industrial, commercial or rural), type of materials received and processed, available space; climate, owner type (private or public), and available infrastructure (e.g., roads, water, waste disposal). A specific composting operation may include structures such as small office/operations buildings, equipment storage, maintenance buildings, operational surfaces (e.g., concrete, asphalt, native ground), water supply structures (e.g., groundwater wells, municipal supply, or tanks), wastewater handling systems, wastewater detention ponds or tanks, and storm water management systems.

Most existing operations are located in areas zoned agricultural, industrial, or co-located with landfills or other waste processing facilities near dense population centers as shown in Figure 3-2. Each operation can range widely with respect to landholdings, from under 5 acres to more than 100 acres.

Composting operations typically include areas with piles of various feedstock materials up to 25 feet tall, and areas with windrows or piles of compost in varying stages of processing up to 15 feet tall. Equipment used at compost operations include loaders, excavators, grinders, screens, and windrow turners that exceed 10 feet in height. The open windrow operation is typically used for processing green or agricultural materials. Operations that process food wastes typically use the aerated static pile method. Composting operations may also be located within large enclosed buildings for covered composting or on open air pads.

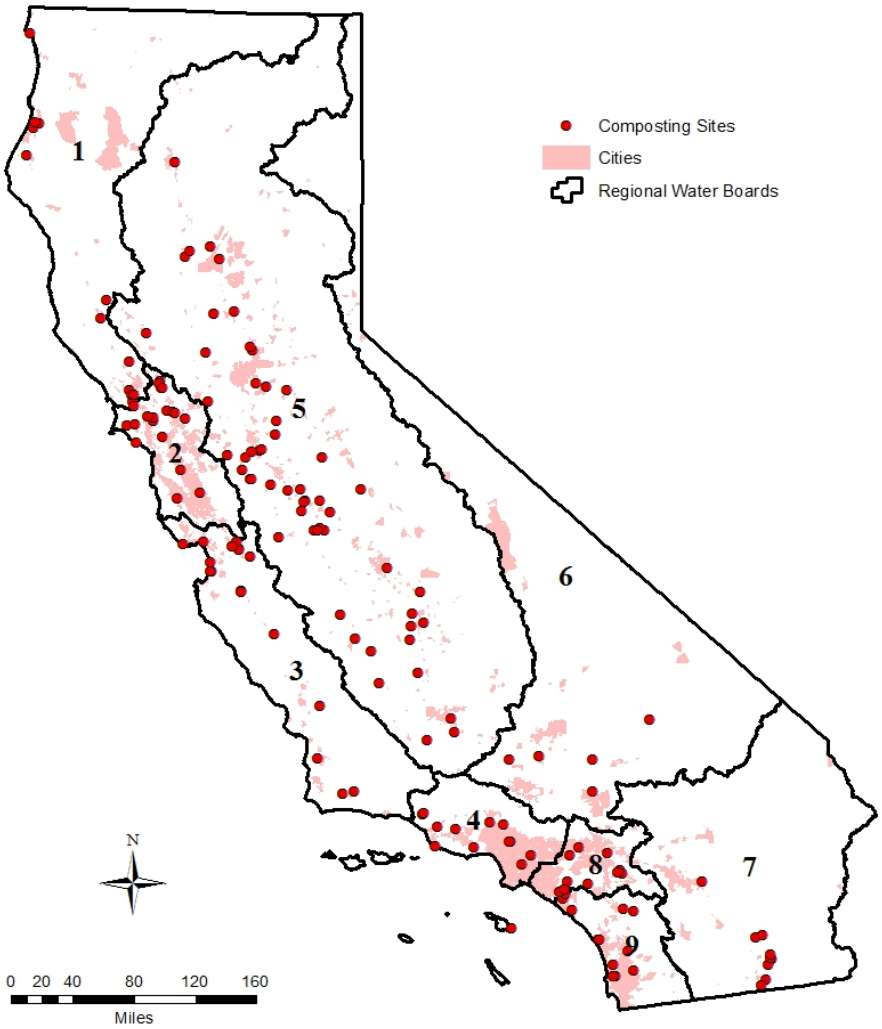


Figure 3-2 Composting Operations and Surrounding Cities

The design and construction of composting operations depends primarily on local land use and climate. Composting operations located in more urbanized areas tend to be constructed on improved surfaces such as concrete or asphalt, have lined detention ponds with aeration, and include significant upgrades such as covered receiving, screening, and grinding areas. Composting operations located in agricultural or rural areas tend to be operated on compacted native soils with unlined detention ponds, ditches, and soil berms. Photographs and descriptions of typical composting operations are provided in Appendix C.

Based on the existing conditions at the time of the NOP release on July 19, 2013, State Water Board staff identified 17 operations covered under existing WDRs or conditional waivers issued by various Regional Water Boards that specifically address the composting operations. Those composting operations are located in Regions 2, 5, 6, 7, and 8. Nine of the 17 operations are under WDRs, prescribing California Code of Regulations, title 27 requirements that include groundwater monitoring, waste pile construction specifications, clean closure, and financial assurances. Eight of the 17 operations have WDRs prescribing waste pile construction and groundwater monitoring only. Fifteen have an operational pad meeting a hydraulic conductivity of 1×10^{-6} cm/s, and detention ponds lined with flexible plastic membranes; nine of the operations require groundwater monitoring. It is assumed that none of these 17 operations would be affected by the General Order.

Since the release of the NOP on July 19, 2013, the San Diego Regional Water Quality Control Board (San Diego Regional Water Board) issued a conditional waiver for composting operations on June 26, 2014. Currently, eight facilities are under the conditional waiver. However, as stated in San Diego Regional Water Board conditional waiver, when the State Water Board adopts the General Order, San Diego Regional Water Board will evaluate the conditional waivers to determine if those projects may be better regulated by the General Order. The San Diego Regional Water Board may terminate enrollment in the conditional waiver and enroll those qualifying operations into the General Order.

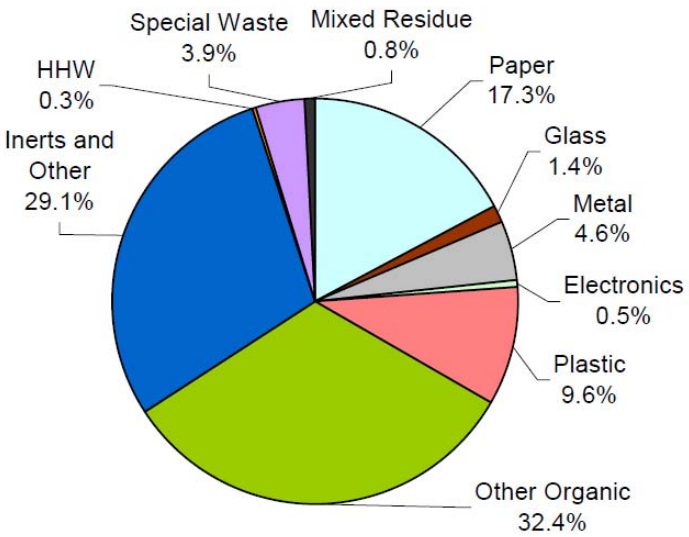
Separate from the 17 operations with existing WDRs and 8 with conditional waivers, other composting operations may be covered under the Industrial Storm Water General Permit Order 97-03-DWQ (General Industrial Permit). These operations are required to be designed to manage a minimum run-off flow from a 25-year, 24-hour design storm event using BMPs to remove pollutants from the storm water prior to discharge. Most of these operations have drainage controls such as on-grade soil berms and ditches to convey run-on or run-off water to sedimentation or infiltration ponds. When the ponds are full, some of these operations discharge wastewater off-site following testing of the discharge, per requirements of the General Industrial Permit. Most of the existing composting operations are designed and operated to discharge storm water or wastewater off the property.

3.2.2. Baseline of Organic Material Management

Based on the information contained in the administrative record regarding current practices for organic material management, organic material is either disposed of in landfills, used as alternative daily cover at landfills, processed by composting, or processed and applied to land for use as a mulch or soil amendment. This section describes the environmental baseline with regards to these options, as that future “with-project” condition is compared to this baseline to determine the amount of impact of the General Order and alternatives.

State Water Board staff used data from CalRecycle regarding the status of potential landfill disposal in California. In 2012, CalRecycle’s disposal reporting system showed that 29,097,960 tons of waste was disposed of in landfills and 1,612,583 tons of green material was used as alternative daily cover at landfills. Most recent data on the composition of this disposed waste was found in the California 2008 Statewide Waste Characterization Study dated August 2009. The study considered geographical regions, waste sectors (residential, commercial, or self-

hauled), and the waste subsectors (single-family residential, multifamily residential, self-hauled, and commercial self-hauled). The results are shown in Figure 3-3.



Material Class	Est. Percent
Paper	17.3%
Glass	1.4%
Metal	4.6%
Electronics	0.5%
Plastic	9.6%
Other Organic	32.4%
Inerts and Other	29.1%
HHW	0.3%
Special Waste	3.9%
Mixed Residue	0.8%
Total	**100%**

Numbers may not total exactly due to rounding.

Figure 3-3 Overview of California's Overall Disposed Waste Stream

3.2.3. Assumptions for Future Composting Operations in California

Based on communications with CalRecycle, it is difficult to forecast where new composting operations will be located, how many will be constructed, how they will be constructed, and what capacity they will have. However; based on past trends, CalRecycle has predicted what types of operations may occur in given settings (e.g. urban, rural, and agricultural, etc.) in the 21st century. In a presentation dated November 1, 2013, CalRecycle anticipated that composting operations constructed close to sources of organic materials in urban zones would consist of community-scale composting. In peripheral or industrial zoned areas, composting operations are anticipated to be small to mid-sized, and would use the aerated static pile method where odor and emission controls are critical for acceptance. In areas further from population centers (e.g., agricultural areas), large-scale mixed compost operations are anticipated to use the aerated static pile method for mixed materials and open windrow for green materials.

As stated previously, the EIR analyzes whether the General Order might create new significant impacts at existing or new composting operations or increase the severity of the expected impacts of new composting operations. However, the General Order would not authorize, approve, permit, or in any way support the location, construction, or operation of a new composting operation (except as for compliance with the General Order). Therefore, the presentation of possible environmental impacts of new composting operations, unrelated to the General Order, is included in the EIR only for disclosure purposes.

New composting operations have the potential to be constructed anywhere within the state, and the State Water Board cannot speculate on how many or where new composting operations will be constructed. CalRecycle anticipates that new composting facilities may be large in size and scope in order to support organic materials diverted from entire regions. These large composting operations have the potential to engage in ancillary activities or create structures that present significant environmental impacts.

Construction of a new composting operation, unrelated to the General Order, is likely to require substantially more disturbance of undeveloped areas, compared to construction activities related to the General Order. Properties selected for development of new composting operations, especially new large-scale commercial facilities, would be subject to severe construction disturbances to create features such as large composting operations pads, access roads, or buildings that are unrelated to the General Order.

It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific impacts can be fully analyzed and project-specific mitigation measures can be properly identified.

3.2.4. Economic Consideration and Environmental Impacts

CEQA Guidelines section 15358, subdivision (b) states that effects analyzed under CEQA must be related to a physical change. CEQA Guidelines section 15131 states that economic information may be included in an EIR. Economic effects are not considered environmental effects under CEQA unless they would lead to an environmental effect.

Stakeholders have expressed concerns that requirements in the General Order may be overly burdensome and would have an impact on the economic viability of existing composting operations in the state. The concern is that the costs incurred to comply with the General Order may result in an existing operation having to cease operations due to not being able to pay for the upgrades necessary for compliance, or raise prices to the point where they would be unable to compete in the marketplace with other management strategies. Either of these situations could result in increased use of alternative methods of disposal (such as landfilling or land application) or possible closure of existing composting operations.

In preparation of the General Order and EIR, the State Water Board analyzed the economics of composting operations. A copy of the economic consideration document is included in Appendix D. Two economic considerations were addressed in the study:

1. The effect of imposing compliance costs will have on the economic viability of the composting operations.
2. Likelihood of the possible shift in compost feedstocks to landfills as a result of complying with the General Order.

3.2.4.1. Impact of General Order Compliance Cost on Existing Composting Operations

State Water Board staff interviewed eight dischargers representing a broad spectrum of private, public, and partnered operators with operations handling 25,000 to 140,000 tons per year. Compliance with the General Order assumed that the discharger would install a lined detention pond, monitor water quality and submit reports, conduct maintenance, and either:

(1) Construct a pad and drainage to meet the hydraulic permeability requirement, or

(2) Conduct groundwater protection monitoring (assumed to be installation of groundwater monitoring wells).

Of the two options, it was assumed that the discharger would most likely implement the lowest cost option which is (2) conduct groundwater protection monitoring.

The survey results showed that the cost of processing composting and complying with the General Order ranged from $19.74 to $32.04 per cubic yard. The cost to comply with the General Order represents $0.23 to $1.44 per cubic yard of compost sold. This information was then extrapolated to the remaining 121 compost operations expected to be impacted by the General Order. This number does not include those composting operations that have WDRs, closed due to other circumstances, or would be potentially exempt from the General Order. Using rainfall and operation size information, a cost of processing including compliance was generated for each operation. The mean processing plus compliance cost is $29.53 per cubic yard. The gross revenue was also calculated resulting in a mean of $42.35 per cubic yard. The mean net revenue is $12.86 per cubic yard and mean profit margin is 29.4 percent. With this type of profit margin, the change in cost is not expected to jeopardize the economic viability of the operations. Comparing these values to landfills, the mean cost differential is $18.28 per cubic yard over composting. The results indicate a low possibility of compost feedstocks being diverted to landfills.

In conclusion, the results of the economic considerations analysis indicates that composting operations complying with the General Order would not be likely to cease operations due to not being able to pay for the upgrades necessary for compliance, or raise their prices to the point where they would be unable to compete with landfills.

3.2.4.2. Impact of General Order Compliance Cost on Diversion of Composting Materials

Stakeholders also expressed that the increased cost to compost would result in more material being land-applied to agricultural properties. State Water Board staff estimated the cost to process the green waste for land application in order to compare it to landfilling and composting. Assuming the green material is chipped using a chipper and spread using an end loader, the estimated cost is $2.74 per ton. This cost is currently significantly less than the cost to compost or dispose of in landfills, as such, already experiences a cost savings that incentivizes the activity. Even if required to obtain a permit for land application activity, the total cost would not be near the total cost to process into compost. Therefore it is reasonable to assume that the increased cost to either existing or new composting operations for compliance with the General Order will not have an effect on the amount of green waste being land-applied above baseline; because if a discharger was given a choice, the discharger would most likely choose the lesser cost option.

Illegal Dumping - It is also not anticipated that the increase in cost of compost due to complying with the General Order would incentivize the choice for a discharger to illegally dump green waste. Illegally dumping the green waste material has legal risks associated with it and there is no information on record regarding the current extent of illegal dumping, and where future illegal activities would happen, how it would happen, and how much would be illegally

disposed. Therefore, it is not possible to specify what resources would be affected, quantify the impact compared to baseline conditions, draw conclusions regarding the significance of impacts, or identify specific mitigation measures necessary to mitigate the impacts. Because it would be too speculative to attempt to classify the impact and draw any conclusions related to a level of significance, no further discussion of this impact will be presented.

Land Application - CalRecycle is currently proposing revisions to the definition of land application in title 14 of the California Code of Regulations. The definition characterizes a legitimate land application activity as meeting the following criteria: compostable material does not contain more than 0.1 percent by weight of physical contaminants greater than 4 millimeters, meets the maximum metal concentrations, meets the pathogen density limits, and is not applied more frequently than once during a 12 month period, and, at the time of application, not exceed an average 12 inches in total accumulated depth. This proposed language essentially requires that organic material (particularly green waste) meet the same standards as for compost before it can be land applied. This could potentially raise the cost of land application to match that of composting or force the material into composting operations. The State Water Board is also planning on conducting public outreach on how this discharge will be regulated for the protection of water quality in accordance with the Water Code. Because of these proposed state activities, State Water Board expects land application activity to decrease from baseline in the future.

Indirect impacts resulting from activities such as transfer to alternate facilities, land application, or illegal dumping were considered. However, the State Water Board is not able to predict which operations would cease; where they are located, where the feedstock would be redirected, and the amount affected. In addition, the State Water Board has no additional information in the record related to the General Order affecting the viability of any particular composting operation and no facility operator has submitted specific evidence that the conditions of the General Order would cause any particular operation to close. To randomly select a composting operation for a more thorough analysis would be misleading. Therefore, it is not possible to specify what resources would be affected, quantify the extent of the impact compared to baseline conditions, draw conclusions regarding the significance of possible impacts, or identify specific mitigation measures necessary to mitigate impacts to a less-than-significant level. Because it would be speculative to attempt to classify the impact and draw any conclusions related to a level of significance, no further discussion of this impact will be presented.

3.2.5. Identifying Impact Significance

The analysis first determines the extent to which each of the resources could be affected by the General Order. The analysis then applies a set of specific significance criteria (Thresholds of Significance) based on the CEQA Guidelines Appendix G Environmental Checklist Form. The “threshold of significance” for a given environmental effect is that level at which the lead agency finds effects of the project to be significant. The threshold can be defined as a quantitative or qualitative standard, or a set of criteria, pursuant to which the significance of a given environmental effect may be determined.

The range of potential impacts is as follows:

- No Impact – where the General Order is not anticipated to create a physical adverse change in the environment or the project would result in only a beneficial impact.
- Less-Than-Significant Impact – where the General Order is not expected to create a substantial adverse change in the environment and for which no mitigation measures are required.
- Significant Impact – where the General Order is anticipated to create a substantial adverse effect on the environment but feasible mitigation measures are available to reduce it to a less-than-significant level.
- Significant and Unavoidable Impact – where the General Order is expected to create a substantial adverse effect on the environment and for which there are no feasible mitigation measures available to reduce it to a less-than-significant level.

The EIR analyzes whether the General Order might create new significant impacts at existing or new composting operations or increase the severity of the expected impacts of new composting operations.

However, the General Order would not authorize, approve, permit, or in any way support the location, construction, or operation of a new composting facility (except as for compliance with the General Order). Therefore, the presentation of possible significant environmental impacts of new composting operations, unrelated to the General Order, is included in the EIR only for disclosure purposes.

3.2.6. Mitigation Measures

Where significant adverse impacts are identified for the General Order, the EIR must "describe feasible measures which could minimize" those impacts to a less-than-significant level (CEQA Guidelines, § 15126.4). For each significant impact, mitigation measures are identified. In some cases, the EIR includes a list of alternative mitigation measures, which could reduce the impact to a less-than-significant level, or contribute to doing so. Where multiple measures are required to reduce an impact to a less-than-significant level, the discussion clearly identifies which combination or permutation of measures would be necessary to achieve the appropriate level of mitigation. Although mitigation measures are presented for the impacts of a new composting operation unrelated to the General Order, the significant impacts and related mitigation measures are outside the scope of the State Water Board's action and are presented for disclosure purpose only.

Where measures are available that can reduce the magnitude of a potential significant impact of the General Order, but not to a less-than significant level, these are also identified. The EIR strives not to include measures that are clearly infeasible. Under CEQA, "feasible means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors" (CEQA Guidelines, § 15364).

If, even with imposition of mitigation measures, the project will generate unavoidable significant effects, the State Water Board can only approve the project if it makes a written statement of

overriding considerations and finds that benefits of the project outweigh the occurrence of those unavoidable effects (CEQA Guidelines, §§15092,15093).

4. AESTHETICS

This chapter describes existing aesthetic conditions in California and analyzes potential impacts that may occur from compliance with the General Order.

4.1. ENVIRONMENTAL SETTING

The State of California has great diversity with respect to visual and aesthetic resources. Composting operations are currently situated and are expected to be located in a wide range of physical settings and vary in size and layout. This section contains a description of the physical environment, including resources in which composting operations are located or may be located in the future.

Visual Landscape

California contains a number of distinct types of landscapes with varying levels of development. For purposes of the EIR, the visual environment has been divided into several categories based on typical land uses: urban, urban fringe, agricultural, and natural open space.

- Urban/developed areas are typical for incorporated areas within California. These areas include existing commercial, industrial, public, and/or residential uses.
- Urban fringe or urban transition areas are located on the edge of urban development and provide a buffer between urban and agricultural or open space uses. Transitional land uses on the edge of urban fringe areas may include commercial, industrial, or public uses compatible with agricultural or open space uses.
- Agricultural areas are typified by broad open agrarian fields including dairies, cropland, vineyards, orchards, and grazing land. Typical elements include farm structures and equipment and scattered rural residences.
- Natural open space areas include expanses of valleys, foothills, mountains, deserts, forests, wetlands, and coastal resources among others that are not utilized for agriculture. Some natural open space areas are designated as federal, state, or local parklands or recreation areas.

Scenic Roadways

A highway may be designated scenic under California's Scenic Highway Program depending upon how much of the natural landscape can be seen by travelers, scenic quality of the landscape, and extent to which development intrudes upon the traveler's enjoyment of the view. The corridor protection program does not preclude development, but seeks to encourage quality development that does not degrade the scenic value of the corridor. Scenic Highways are identified as either eligible (E) for listing or officially designated (OD). A list of eligible and officially designated routes is available on the California Department of Transportation's (Caltrans) website (Caltrans, 2013a).

Currently there are 66 officially designated State Scenic Highways, totaling 1,260 miles; and 6 officially designated County Scenic Highways, totaling 76 miles throughout California (Caltrans, 2013b). In addition, there are 154 eligible scenic highways throughout California (Caltrans, 2013a). The locations of these scenic highways are available on the California Scenic Highway Mapping System provided by the Caltrans at http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm.

4.2. ENVIRONMENTAL ANALYSIS

4.2.1. Approach and Methods

The following evaluation of aesthetics and scenic resources was prepared by considering applicable regulations and guidelines, and typical construction activities and operations attributable to the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential significant impacts to aesthetics takes into consideration the questions in Appendix G of the CEQA Guidelines and mandatory findings of significance in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order, and a summary of possible impacts from development of new composting operations that are unrelated to the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including studies that could include further analysis of these particular aesthetic impacts on a project-by-project basis.

4.2.2. Thresholds of Significance

According to Appendix G of the CEQA Guidelines, an impact related to aesthetics would be considered significant if it would result in any of the following issues:

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

4.2.3. Impacts and Mitigation Measures

Impact 4.1. Compliance with the General Order at composting operations is not expected to have a substantial adverse effect on a scenic vista.

The General Order requires composting operations to manage wastewater using options such as detention ponds, storage tanks, or treatment facilities that may already be present at existing composting operations and that may or may not be compliance responses at new composting operations. Some wastewater management features such as above-grade storage tanks, may be visible, and may be seen if within line of sight of a scenic resource. However, compost operations are typically located in agricultural or urban-fringe industrial areas where these operations are likely to be more compatible. These features are considered an ancillary part of the operation and therefore are not expected to have a substantial adverse effect on the visual character or quality of the site and its surroundings. Photographs of various composting operations are shown in Appendix C.

Most existing composting operations are on sites that have been subjected to severe disturbance, including grading, trenching, paving, and construction of roads and structures; construction of new composting operations will likely require similar disturbance. The additional construction of a pond, tank and/or treatment system to comply with the General Order is not expected to substantially alter the aesthetics of a composting operation.

It is anticipated that compliance responses would be developed in compliance with general plans designating scenic vistas or corridors, and local zoning ordinances establishing design guidelines such as minimum setbacks, maximum height requirements, maximum density, and/or landscaping requirements. Additionally, it is reasonably foreseeable that composting operations would implement measures to maintain or improve the visual quality of their businesses because of local ordinances, permit conditions, or good business practices. Therefore, compliance with the General Order is expected to have a less than significant impact.

Mitigation Measure 4.1. None required. However, there are recognized measures to further minimize potential aesthetic impacts and/or improve the visual character of industrial, business, and/or commercial facilities. Examples of recognized and accepted measures that are routinely required by regulatory agencies include:

- To the extent possible, install equipment and improvements within existing operation boundaries;
- Where new structures or enclosures are necessary, avoid sky lining of structures or electrical lines;
- Install privacy fencing and/or vegetative screening;
- Schedule hours of operation to accommodate light and glare;
- Design outdoor lighting to aim downward onto the project site and not glare skyward or onto adjacent parcels;
- Locate and design improvements such as structures and roads to blend with existing visual environment, vegetation, and facilities.

Impact 4.2. Compliance with the General Order at composting operations is not expected to substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

Features added in response to compliance with the General Order at new and existing composting operations have the potential to be seen if within line of sight of a scenic resource.

California has 65 designated State Scenic Highways. Locations of the State Scenic Highways in relation to the existing composting operations are shown in Figure 4-1. Scenic Highway geographic information system (GIS) data can be accessed at: http://www.dot.ca.gov/hq/tsip/gis/datalibrary/gisdatalibrary.html.

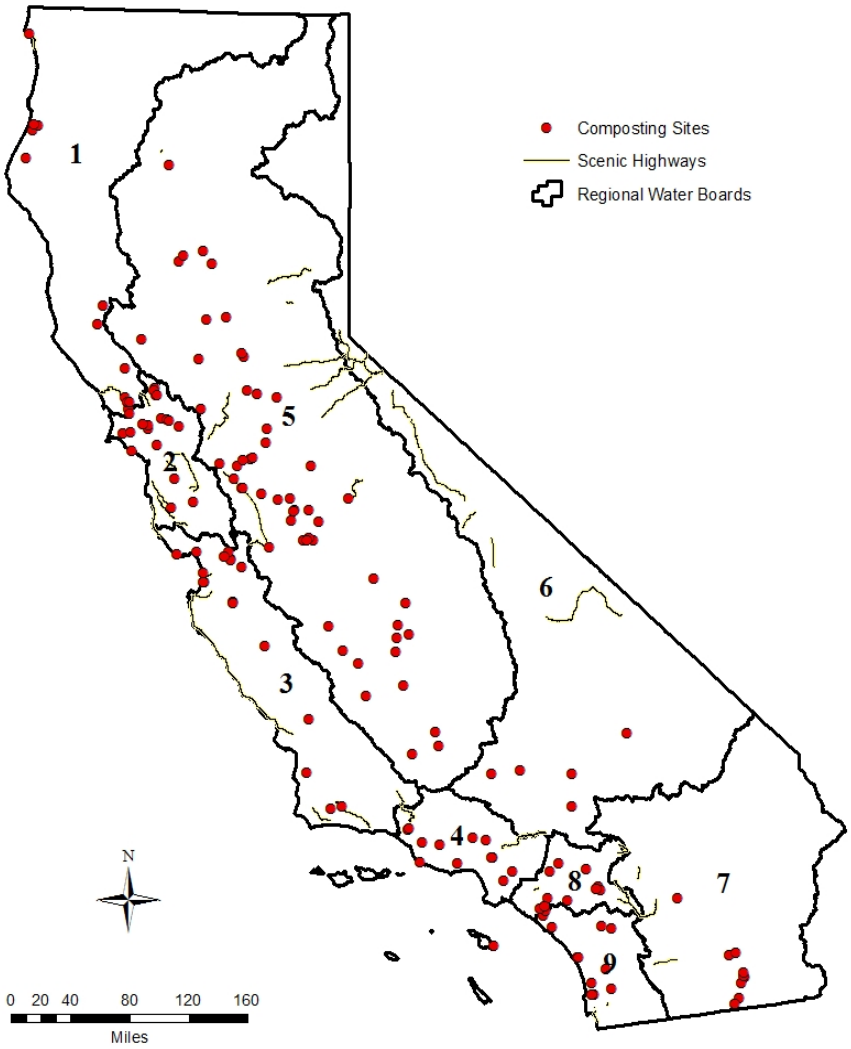


Figure 4-1 Location of Scenic Highways and Composting Operations

State Water Board staff performed a line of sight analysis to determine if any of the existing composting operations visually impact an officially designated State Scenic Highway. Line of sight analysis determined the visibility of sight lines between the composting operations and the State Scenic Highways over a 30-meter spatial resolution digital elevation model (DEM). The California 30-meter DEM, part of the National Elevation Dataset (NED), can be accessed at: http://ned.usgs.gov. Analysis determined that none of the existing identified composting operations are visible along State Scenic Highways.

The General Order does not prescribe siting of new composting operations, and it is reasonably foreseeable that new composting operations could be located within line of sight of scenic resources. However, it is anticipated that compliance responses would be consistent with local zoning ordinances establishing design guidelines such as minimum setbacks, maximum height requirements, maximum density, and/or landscaping requirements. New composting operations may present impacts within line of sight for scenic highways; however, compliance with the General Order would not substantially alter the magnitude of these impacts.

Therefore, compliance with the General Order is not expected to have a significant impact to scenic resources within a state scenic highway.

Mitigation Measure 4.2. None Required. See Mitigation Measure 4.1.

Impact 4.3. Compliance with the General Order at composting operations is not expected to substantially degrade the existing visual character or quality of the site and its surroundings.

For the reasons discussed in Impact 4.1, this impact is anticipated to be less than significant.

Mitigation Measure 4.3. None Required. See Mitigation Measure 4.1.

Impact 4.4. Compliance with the General Order at composting operations is not expected to create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

The General Order requires composting operations to manage wastewater using options such as detention ponds, storage tanks, or treatment facilities that may or may not be already present. It is possible that a selected design may include a new source of light or glare such as safety lighting for new control panels or treatment systems. However, lighting is expected to blend in with the needs of the composting operation and not be substantial regardless of where they are located. Therefore, compliance with the General Order would result in less than significant impacts to day or nighttime views.

Mitigation Measure 4.4. None Required. See Mitigation Measure 4.1.

Impact 4.5. Development of new composting operations, unrelated to the General Order, may have the potential to have a substantial adverse effect on a scenic vista; substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

New composting operations may be constructed and located anywhere within the state, consistent with local land use restrictions. The State Water Board cannot speculate on how many or where new composting operations will be constructed. Generally, construction activities related to development of new composting operations, especially new large -scale commercial operations, may consist of construction of large composting operations pads, access roads, or buildings. Depending on the equipment used, type of features and structures, and scale of operation, a new composting operation, unrelated to the General Order, is likely to require substantially more disturbance of undeveloped areas, compared to construction activities related to the General Order.

The impacts of developing new composting operations, unrelated to the General Order, pose a potentially significant aesthetic impact to scenic vistas or resources. Therefore, potential impacts resulting from development of new composting, unrelated to the General Order, may be significant.

Mitigation Measure 4.5. *Recognized mitigation measures that may reduce aesthetic impacts for new composting operations, unrelated to the General Order, are listed in Mitigation 4.1.*

It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific impacts to aesthetics can be fully analyzed and project-specific mitigation measures can be properly identified. It is further anticipated that compliance responses would be consistent with local zoning ordinances establishing design guidelines such as minimum setbacks, maximum height requirements, maximum density, and/or landscaping requirements. Appendix E includes a list of CEQA documents reviewed and a summary of impacts and mitigations provided by individual facilities.

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts to aesthetics resulting from site disturbance for development of new composting operations, unrelated to the General Order, may be significant and unavoidable.

5. AGRICULTURE AND FORESTRY

This chapter describes existing agricultural and forestry conditions in California and analyzes potential impacts that may occur from compliance with the General Order.

5.1. ENVIRONMENTAL SETTING

Agricultural Resources

In 2011, California remained the number-one state in farm receipts, with $43.5 billion in revenue representing 11.6 percent of the U.S. total. California accounted for 15 percent of national receipt for crops, and 7.4 percent of the U.S. revenue for livestock and livestock products. California's agricultural abundance includes more than 400 commodities and produces nearly half of the U.S. grown fruits, nuts, and vegetables. In 2011, 81,500 farms operated in California, with 25.4 million acres devoted to farming and ranching. The California Department of Food and Agriculture estimated that the average farm size was 312 acres (CDFA, 2013).

Although California remains the nation's top agricultural producer, it has experienced significant farmland loss because of urbanization. CDFA estimates that about 3.4 million acres of land in California's agricultural counties are now urbanized. Development is now consuming approximately 40,000 acres of agricultural land in California per year. In the San Joaquin Valley, which accounts for more than half of California's total agricultural output, more than 60 percent of all land developed was prime, unique, or of statewide importance. Disproportionate consumption of the best farmland is occurring primarily because most California cities were located in areas with good soils and abundant water. Other causes of agricultural land loss include removal of agriculture for environmental purposes (such as creation or enlargement of wildlife refuges) and withdrawals due to water shortages (CDFA, 2009).

Williamson Act Agricultural and Open-Space Land Resources

Williamson Act lands are privately-held lands within agricultural preserves that are designated as agricultural lands or open space for a specified period of time, typically 10 to 20 years. According to the 2012 California Land Conservation Act Status Report (Department of Conservation, 2013), local governments and landowners voluntarily enter into a contract with the state in which each accepts certain costs in return for other benefits. During the term of the contract, the landowner foregoes the possibility of development, or conversion to nonagricultural or non-open space use in return for lower property taxes. The local government foregoes a portion of its property taxes in return for the planning advantages and values implicit in retaining land in agriculture or open space.

Williamson Act lands have an initial term of ten or more years with taxes reduced to reflect the open space or agricultural land use. At the end of the term, the contract renews automatically each year, unless a request for nonrenewal is filed. The nonrenewal notice begins a nine-year "nonrenewal" period in which the tax assessment gradually increases to meet current tax rates. Termination of Williamson Act land contracts may also be achieved through cancellation, public acquisition, city annexation, and easement exchange.

Although the primary activities on Williamson Act lands are related to agriculture, recent regulatory changes have been made to enable other land uses such as solar facilities.

Local land use policies for permitting composting operations on Williamson Act lands vary according to local jurisdictions. Some counties have defined composting operations as activities related to or compatible with agricultural uses on Williamson Act lands. At least one county is currently pursuing non-renewal of a Williamson Act contract in order to accommodate expansion of an existing compost operation. Others do not permit composting operations on Williamson Act lands.

Forest Resources

California contains more than 33 million acres of forests comprising a broad range of tree species, tree sizes, and levels of canopy closure (USFS 2008, p.124). Conifer forests and woodlands cover more than 19 million acres and are most extensive in the Sierra, Modoc, and Klamath/North Coast bioregions. Hardwood forests and oak woodlands cover more than 13 million acres and extend mostly along the perimeter of the Sacramento and San Joaquin Valleys and throughout the coastal ranges (USFS 2008, p. 128). The most productive timber growing portion of California's forests consist of approximately 19 million acres of public and private timberland—that is, land capable of growing more than 20 cubic feet of wood per acre per year and statutorily available for timber management (USFS 2008, p. 127).

In the case of public ownerships (53 percent of timberlands), many lands capable of timber production have been administratively withdrawn during the past two decades for a variety of purposes and have been directed to primary uses other than timber production. California has 9 million acres of privately owned timberland, of which 5.4 million acres are classified as timberland production zone (TPZ) where long term tax and regulatory structures favor timber production over potential conversion to other uses (USFS 2008, p. 127). Maps showing various forestry resources under the Fire and Resource Assessment Program are available at the Department of Forestry and Fire Protection website at http://frap.fire.ca.gov/.

5.2. ENVIRONMENTAL ANALYSIS

5.2.1. Approach and Methods

The following evaluation of agriculture and forestry impacts was prepared by considering applicable regulations and guidelines, and typical construction activities and operations attributable to compliance with the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential significant impacts to agriculture and forestry takes into consideration the questions in Appendix G of the CEQA Guidelines and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order, and a summary of possible impacts from development of new composting operations, which are unrelated to the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including studies that could include further analysis of these particular agriculture and forestry impacts on a project-by-project basis.

5.2.2. Thresholds of Significance

According to Appendix G of the CEQA Guidelines, an impact to agriculture and forestry is considered significant if the General Order would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency to nonagricultural use.
- Conflict with existing zoning for agricultural use or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of forest land (as defined in Pub. Resources Code, § 12220(g)), timberland (as defined by in Pub. Resource Code, § 4526), or timberland zoned Timberland Production (as defined by Gov. Code, § 51104(g).); or
- Result in loss of forest land or conversion of forest land to non-forest use.
- Involve other changes in the existing environment, which, due to location or nature, could result in conversion of Farmland to non-agriculture use or conversion of forest land to non-forest use.

5.2.3. Impacts and Mitigation Measures

Impact 5.1. Compliance with the General Order at composting operations may have the potential to result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

Composting is currently considered an agricultural use or a use compatible with agriculture. Figure 5-1 illustrates the location of twenty-five existing composting operations in areas designated as Prime Farmland, Unique Farmland, and Farmland of Statewide Importance (2010, California Department of Conservation, Farmland Mapping and Monitoring Program). Additionally, composting operations require use of labor and equipment that is similar to agricultural industrial operations.

The General Order requires composting operations to manage wastewater using options such as detention ponds, storage tanks, or treatment systems. These options have the potential to enlarge the footprint of an existing or planned new composting operation.

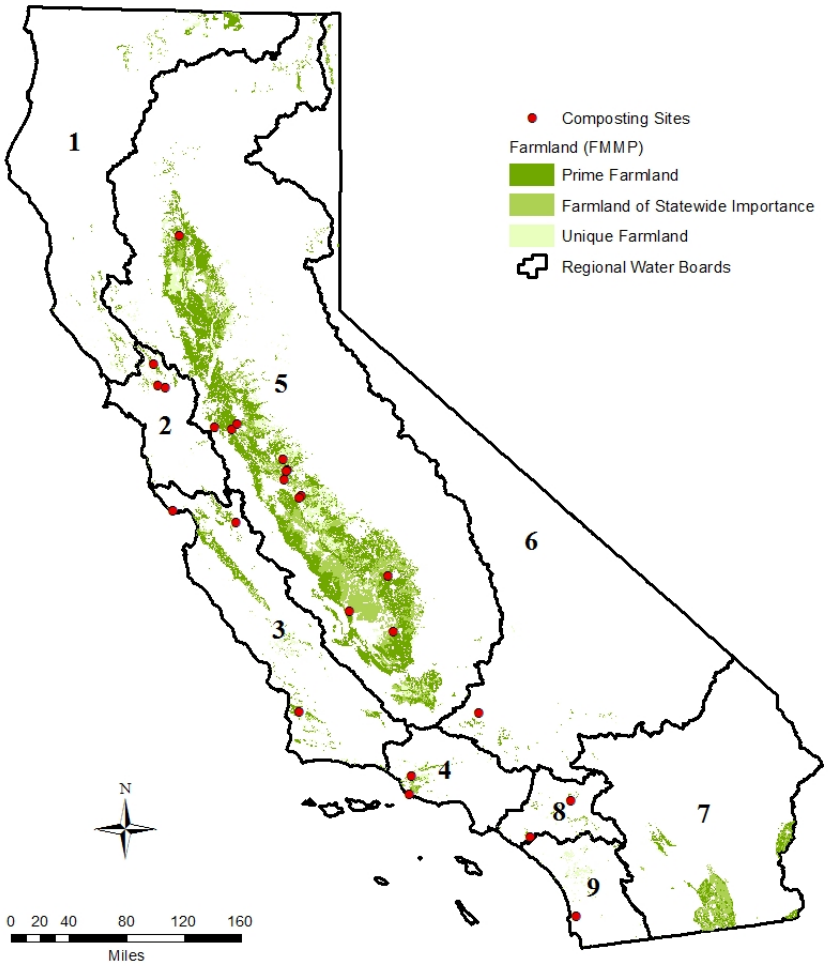


Figure 5-1 Composting Operations Located Within Farmland Areas

New composting operations may be constructed anywhere in the state, including on land that is currently used for agriculture or open space, consistent with local land use regulations. The additional land potentially required for composting operations to comply with the General Order is not expected to result in significant conversion of agricultural land, and the General Order does not change zoning or land use designation.

However, in order to accommodate features required by the General Order, in some cases there may be the potential for expansion into or purchase of property which may include agricultural lands designated as Prime Farmland, Unique Farmland, and Farmland of Statewide Importance. Therefore, the potential for conversion of lands designated as agricultural land to non-agricultural use may be significant.

This impact could be reduced to less than significant by mitigation at the local level, beyond the authority of the State Water Board.

Mitigation Measure 5.1.

It is reasonably foreseeable that a project specific CEQA evaluation will be required for modifications to existing or new composting operations, where project specific agricultural land use impacts can be fully analyzed and project specific mitigation measures can be properly identified.

Potential impact may be further reduced by implementation of the following mitigation measures:

- To the extent possible, avoid siting new composting operations on land designated as Prime or Unique Farmland, Farmland of Statewide Importance, or Williamson Act contract lands.
- Secure appropriate land use permits from local jurisdictions prior to modification of existing composting operations or construction at new composting operations.
- Plan and construct improvements that respond to the General Order in accordance with general plans, appropriate agriculture and forest lands preservation programs, and agriculture and forest lands conservation easements.

The State Water Board does not have authority to require implementation of mitigation related to agricultural land designation or land use. The authority to determine project-level impacts and to require project-level mitigation lies with the local land use and/or permitting agency for individual projects.

Because the State Water Board does not have the authority to impose mitigation measures as described above, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potential impacts related to Prime or Unique Farmland, Farmland of Statewide Importance, or Williamson Act contract lands for the General Order could be potentially significant and unavoidable.

Impact No. 5.2. Compliance with the General Order at composting operations may have the potential to conflict with existing zoning for agricultural use or a Williamson Act contract.

Modifications to comply with the General Order at existing or new composting operations, including construction of detention ponds or tanks, may have the potential to expand the footprint of an existing or planned composting operation. It is conceivable that expansion of an existing property could result in conflict with existing agricultural zoning or Williamson Act contract.

For the reasons discussed in Impact 5.1, conflict with existing zoning for agricultural use or a Williamson Act contract may have the potential to be significant.

Mitigation Measure 5.2. See Mitigation Measure 5.1

Impact 5.3. Compliance with the General Order at composting operations is not expected to conflict with existing zoning for, or cause rezoning of, forest land (Pub. Resources Code, § 12220, subd. (g)) or timberland (Pub. Resources Code, § 4526), or timberland zoned as Timberland Production (as defined by Government Code section 51104(g)).

Compliance with the General Order requires the discharger to manage wastewater generated by operations. Management options include, but are not limited to, construction of detention ponds, storage tanks, or wastewater treatment systems that may or may not be already present. Such new features may necessitate expanding the operational footprint. If an existing operation is located in an area zoned as a forest resource, the General Order has the potential to convert such lands to manage wastewater.

Spatial analysis was performed to determine if any of the identified composting operations are located in forest land. Detailed geographic information system (GIS) data was not available to determine if the sites "conflict with existing zoning for, or cause rezoning of forest land (Pub. Resources Code, § 12220, subd. (g)), timberland (Pub. Resources Code, § 4526), or timberland zoned Timberland Production (Gov. Code, § 51104 subd. (g)); or [will] result in the loss of forest land or conversion of forest land to non-forest use" was not available. However, data to determine if a composting operation is located within areas of designated forest land cover were available. Statewide forest cover was extracted from the United States Geological Service (USGS) Multi-Resolution Land Characteristics Consortium Land Cover Data 2006. The data can be accessed at: http://www.mrlc.gov/nlcd06_data.php. The analysis determined if any of the identified composting operations were located in the following forest land cover classes:

- LU 41; Deciduous Forest – areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change.
- LU 42; Evergreen Forest – areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species maintain their leaves all year. Canopy is never without green foliage.
- LU 43; Mixed Forest – areas dominated by trees generally greater than 5 meters tall, and greater than 30 percent of total vegetation cover. Neither deciduous nor evergreen species are greater than 75 percent of total tree cover.

Analysis determined that three composting operations, one in each forest class, are located on Forest land as shown in Figure 5-2. These facilities were further observed using aerial photographs to confirm that the locations were indeed within forested areas. All three locations were either within agricultural or near residential areas with limited tree canopy; none of the existing composting operations appear to be located in forest land or timberland defined by the Public Resources Code.

There is a potential for new composting operations to be constructed anywhere in the state, including on land that is currently used for forest land or timberlands, consistent with local land use regulations. The additional land potentially required for composting operations to comply with the General Order is not expected to result in significant conversion of forest or timber

lands, and the General Order does not change zoning or land use designation. Therefore, this impact is expected to be less than significant.

Mitigation Measure 5.3. None required. However, implementation of Mitigation Measure 5.1 may further reduce potential impacts.

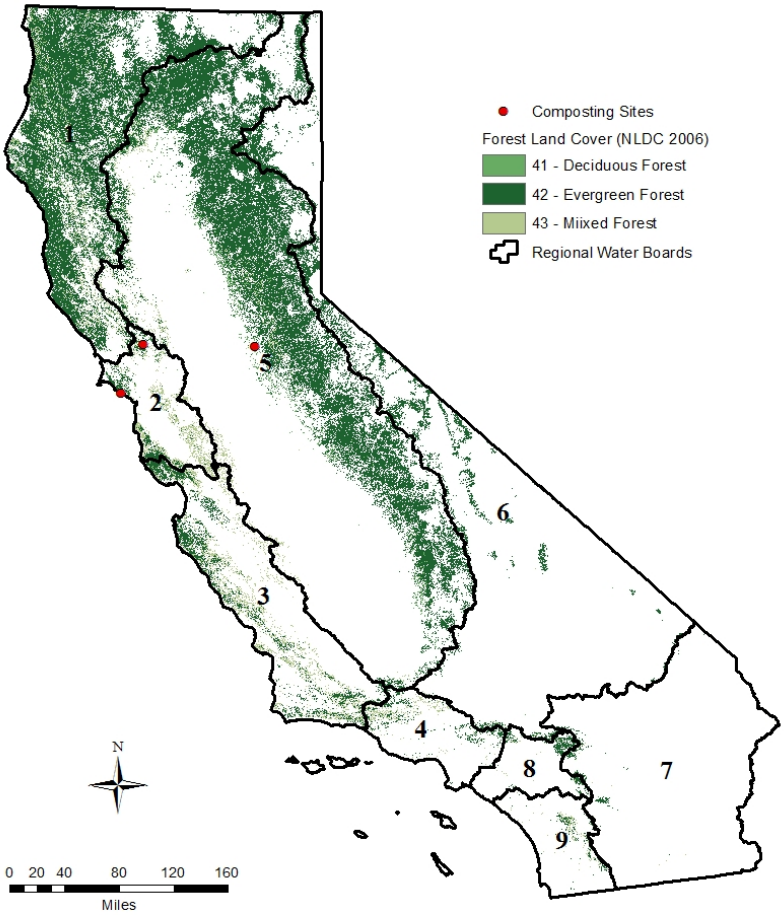


Figure 5-2 Composting Operations Located within Forest Cover Areas

Impact No. 5.4. Compliance with the General Order at composting operations is not expected to result in the loss of forest land or conversion of forest land to non-forest use.

For the reasons stated in Impact 5.3, this impact is expected to be less than significant.

Mitigation Measure 5.4. None required. However, implementation of Mitigation Measures 5.1 may further reduce potential impacts.

Impact No. 5.5. Compliance with the General Order at composting operations is not expected to 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 forest land to non-forest use.

There is a potential for new composting operations to be constructed anywhere in the state, including on land that is currently used for agriculture or open space, consistent with local land use regulations. The additional land potentially required for composting operations to comply with the General Order is not expected to result in significant conversion of agricultural land, and the General Order does not change zoning or land use designation. For the reasons here and in Impact 5.3, this impact is expected to be less than significant.

Mitigation Measure 5.5. None required. However, implementation of Mitigation Measures 5.1 may further reduce potential impacts.

Impact 5.6. Development of new composting operations, unrelated to the General Order, may have the potential to result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agriculture use; conflict with existing zoning for agricultural use or a Williamson Act contract; conflict with existing zoning for or cause rezoning of forest land, timberland, or timberland zoned Timberland Production; loss of or conversion of forest land to non-forest use, or result in other changes which could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

There is a potential for new composting operations to be constructed anywhere in the state including on land that is currently used for agriculture, open space, forest land, or timberlands; consistent with local land use regulations. The General Order does not change zoning or land use designation, and the potential for converting these lands is outside the scope of this analysis.

Development of new composting operations, unrelated to the General Order, may have the potential to impact agricultural lands, Williamson Act lands, forest lands, and timber lands. New composting operations would be subject to severe construction disturbances that are unrelated to the General Order, especially new large-scale commercial operations that may consist of large composting operations pads, access roads, or buildings. Construction of a new composting operation is likely to require substantially more disturbance of undeveloped areas, compared to construction activities related to the General Order.

CalRecycle anticipates that some new operations may be large in size and scope in order to support organic materials diverted from entire regions. These large operations have the potential to engage in ancillary activities or structures that would not be compatible with agricultural lands or forest lands.

New composting operations that anticipate a potential conflict with the Williamson Act have an option to file a notice of nonrenewal which would begin a 9-year non-renewal process to terminate the Williamson Act contract, or terminate the contract by public acquisition pursuant to the Williamson Act. This non-renewal clause and other limitations may have the potential to reduce the availability of Williamson Act lands. It is reasonably foreseeable that a project

specific CEQA evaluation will be required for each new composting operation, where project specific agricultural and forestry impacts can be fully analyzed and project-specific mitigation measures can be properly identified.

Therefore, potential impacts to agriculture and forestry resulting from the construction of new composting operations, unrelated to the General Order, may be significant.

Mitigation Measure 5.6. *The recognized practices listed in Mitigation Measure 5.1 may be implemented to reduce the impact of new composting operations, unrelated to the General Order.*

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts to agricultural and forest lands resulting from development of new composting operations, unrelated to the General Order, may be unavoidable.

6. AIR QUALITY AND GREENHOUSE GAS

This chapter describes the existing condition of air quality and greenhouse gases (GHG) in California, and analyzes potential impacts that may occur from compliance with the General Order.

6.1. ENVIRONMENTAL SETTING

Ambient air quality is generally affected by climatological conditions, topography of the air basin, and the types and amounts of pollutants emitted. Composting is a source of GHGs, volatile organic compounds (VOCs), reactive organic gases (ROG), particulate matter (PM), and ammonia. This section discusses California's climate, meteorology, and air quality pollutants of concern including criteria air pollutants, toxic air contaminants (TACs), odors, and GHGs that could be emitted during construction and operation of composting operations.

Topography, Climate and Meteorology

Air quality is affected by the rate, amount, and location of pollutant emissions, and associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions (e.g., wind speed, wind direction, and air temperature) combined with local surface topography (e.g., geographic features such as mountains and valleys) determine how air pollutant emissions affect local air quality.

Because of the strong influence of the Pacific Ocean and mountains, variations in climate in California run in a general east-to-west direction. California's varied climate includes Mediterranean (most of the state), steppe (scattered foothill areas), alpine (high Sierra), and desert (Colorado and Mojave Deserts).

The Sierra Nevada, Coast, and Cascade Ranges act as barriers to the passage of air masses. During summer, California is protected from much of the hot, dry air masses that develop over the central United States. Because of these barriers and California's western border on the Pacific Ocean, summer weather is generally milder in portions of the state than that in the rest of the country, and is characterized by dry, sunny conditions with infrequent rain.

In winter, the same mountain ranges prevent cold, dry air masses from moving into California from the central areas of the United States. Consequently, winters in California are also milder than would be expected at its latitude.

Stationary and Mobile Sources of Air Pollution

Air pollutant emissions within the state are generated from stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources are usually subject to a permit from the local air district to operate, occur at specific identified locations, and are usually associated with manufacturing and industry. Examples of point sources include refineries, concrete batch plants, and can coating operations.

Area sources are widely distributed, produce many small emissions, and may not require permits from any air agency to operate. Examples of area sources that do not require permits include residential and commercial water heaters, painting operations, portable generators, lawn

mowers, and consumer products such as barbeque lighter fluid and hairspray. Examples of area sources that require permits are landfills and composting operations.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources are those that are legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, racecars, and construction vehicles.

Air Quality

Air Basins

California is divided geographically into 15 air basins to manage the air resources of the state on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The names of the basins are listed below on Figure 6-1. A description of each air basin is provided in Appendix F.

Source: http://www.arb.ca.gov/ei/maps/statemap/abmap.htm

Figure 6-1 California Air Basins

Pollutants of Concern (Criteria Pollutants)

In accordance with the federal and California Clean Air Acts, national and state ambient air quality standards, respectively, were developed for six common “criteria pollutants” to protect

human health and welfare: PM (also known as particle pollution), ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead. The health effects and other characteristics associated with the criteria pollutants are discussed below.

Ozone. Ozone is a colorless gas that has a pungent odor and causes eye and lung irritation, visibility reduction, and crop damage. A primary constituent of smog, ozone is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving oxides of nitrogen (NO_x) and ROG. Because these reactions occur on a regional scale, ozone is considered a regional air pollutant. Industrial fuel combustion, fugitive emissions from manufacturing processes and motor vehicles are primary sources of NO_x and ROG.

Ozone concentrations tend to be higher in the late spring, summer, and fall, when long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone. Ground level ozone in conjunction with suspended PM in the atmosphere leads to hazy conditions generally termed as “smog.”

Carbon Monoxide (CO). CO is an odorless, colorless gas that can impair transport of oxygen in the bloodstream, aggravate cardiovascular disease, and cause fatigue, headache, confusion, and dizziness. CO forms through incomplete combustion of fuels in vehicles, wood stoves, industrial operations, and fireplaces.

Ambient CO concentrations normally are considered a local effect, and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence carbon monoxide concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues.

CO concentrations have declined dramatically in California due to existing controls and programs, and most areas of the state have no problem meeting state and federal CO standards. CO measurements and modeling were important air quality monitoring measurements in the early 1980’s, when CO levels were regularly exceeded throughout California. In more recent years, CO monitoring has not been a priority in most California air districts due to retirement of older polluting vehicles, reduced emissions from new vehicles, and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the ARB’s 2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas (ARB, 2004):

“The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (CARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard.”

Particulate Matter. PM is generally composed of particles in the air such as dust, soot, aerosols, fumes, and mists. Of particular concern are inhalable particulates that have aerodynamic diameters of 10 micrometers (µm) or less (PM_{10}). A subgroup of these particulates is fine particulates (particles with aerodynamic diameters less than 2.5 µm, $PM_{2.5}$), which have very different characteristics, sources, and potential health effects than coarse particulates (particles with aerodynamic diameter between 2.5 to 10 µm). Coarse particulates are generated by sources such as windblown dust, agricultural fields, and dust from vehicular traffic on unpaved roads. $PM_{2.5}$ is generally emitted from activities such as industrial combustion, vehicle exhaust, and residential wood-burning stoves and fireplaces. $PM_{2.5}$ is also formed in the atmosphere when gases such as sulfur, nitrogen oxides, and volatile organic compounds emitted by combustion activities are transformed by chemical reactions in the air.

PM_{10} affects breathing and the respiratory system, and in particular, can damage lung tissue, and contribute to cancer and premature death. Separate standards for $PM_{2.5}$ were established in 1997 because these smaller particles can penetrate deep into the respiratory tract and cause their own unique adverse health effects.

Nitrogen Dioxide (NO_2). NO_2 is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Nitrogen dioxide acts as a respiratory irritant and is a precursor of ozone. NO_2 is a major component of the group of gaseous nitrogen compounds commonly referred to as NO_x. NO_x are produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit. Typically, NO_x emitted from fuel combustion are in the form of nitric oxide and nitrogen dioxide (NO_2). Nitric oxide is often converted to NO_2 when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, emissions of NO_2 from combustion sources are typically evaluated based on the amount of NO_x emitted from the source.

Sulfur Dioxide (SO_2). SO_2 is a colorless acidic gas with a strong odor. The major source of SO_2 is fuel-burning equipment combusting fossil fuels such as coal, diesel, and biogas. Concentrations of SO_2 in air greater than 2 parts per million (ppm) may affect breathing, irritate eyes, and may aggravate existing respiratory and cardiovascular disease (CDC, 2014). Sulfur dioxide is also a primary contributor to acid deposition, which causes acidification of lakes and streams, and can damage trees, crops, building materials, and statues. In addition, sulfur compounds in the air can contribute to visibility impairment.

Lead. Lead has a range of adverse neurotoxin health effects and was formerly released into the atmosphere primarily via leaded gasoline products. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. Lead emissions are not required to be quantified, as such, will not be further evaluated in this analysis.

Area Designations

The federal and state Clean Air Acts require designation of clean or dirty air quality areas. The status of each air basin for 2012 is summarized in Table 6-1. Detailed information is provided in Appendix G.

Table 6-1 California Ambient Air Quality Standards - 2012 Area Designations

AIR BASIN	OZONE				PM_{10}			$PM_{2.5}$			CO		NO_2		SO_2	LEAD	
	N	NA-T	U	A	N	U	A	N	U	A	U	A	N	A	A	N	A
GREAT BASIN VALLEYS					x					x				x	x		x
Alpine County			x								x						
Inyo County	x											x					
Mono County	x											x					
LAKE COUNTY				x			x			x		x		x	x		x
LAKE TAHOE		x			x					x		x		x	x		x
MOJAVE DESERT	x				x									x	x		x
Kern County (portion)											x						
Los Angeles County (portion)												x					
Riverside County (portion)											x						
San Bernardino County (portion)												x					
San Bernardino County																	
- County portion of federal southeast								x									
- Desert Modified AQMA for Ozone								x									
Remainder of Basin									x								
MOUNTAIN COUNTIES														x	x		x
Amador County	x					x					x						
Calaveras County	x				x						x						
El Dorado County (portion)	x				x						x						
Mariposa County	x										x						
- Yosemite National Park					x												
- Remainder of County						x											
Nevada County	x				x						x						
Placer County (portion)	x				x					x	x						
Plumas County			x		x				x			x					
- Portola Valley								x									
Sierra County			x		x						x						
Tuolumne County	x					x						x					
NORTH CENTRAL COAST	x				x					x				x	x		x
Monterey County												x					
San Benito County											x						
Santa Cruz County											x						
NORTH COAST				x						x				x	x		x
Del Norte County											x						
Humboldt County												x					
Mendocino County												x					
Sonoma County (portion)							x				x						
- Remainder of Basin					x												
Trinity County											x						

A – Attainment N – Non-attainment NA-T – Non-attainment Transitional U - Unclassified

Table 6-1 California Ambient Air Quality Standards – 2012 Area Designations

AIR BASIN	OZONE				PM_{10}			$PM_{2.5}$			CO		NO_2		SO_2	LEAD	
	N	NA-T	U	A	N	U	A	N	U	A	U	A	N	A	A	N	A
NORTHEAST PLATEAU				x						x	x			x	x		x
Siskiyou County							x										
- Remainder of Basin					x												
SACRAMENTO VALLEY					x									x	x		x
Butte County								x				x					
Colusa and Glenn Counties		x								x	x						
Placer County (portion)												x					
Sacramento County								x				x					
Shasta County										x	x						
Solano, Sutter, Yolo, and Yuba Counties		x								x	x	x					
Tehama County											x						
Remainder of Basin	x								x								
SALTON SEA	x				x									x	x		x
Imperial County												x					
Riverside County (portion)												x					
- City of Calexico								x									
- Remainder of Basin									x								
SAN DIEGO					x			x				x		x	x		x
SAN FRANCISCO BAY	x				x			x						x	x		x
SAN JOAQUIN VALLEY	x				x			x						x	x		x
Fresno County												x					
Kern County (portion)												x					
Kings County											x						
Madera County											x						
Merced County											x						
San Joaquin County												x					
Stanislaus County												x					
Tulare County												x					
SOUTH CENTRAL COAST	x				x							x		x	x		x
San Luis Obispo County										x							
Santa Barbara County									x								
Ventura County										x							
SOUTH COAST	x				x			x					x		x		x
Los Angeles County (portion)												x				x	
Orange County												x					
Riverside County (portion)												x					
San Bernardino (portion)												x					

A – Attainment N – Non-attainment NA-T – Non-attainment Transitional U - Unclassified

Current Statewide Emissions

During the last 20 years, California's population has nearly doubled. However, despite substantial growth, California has made dramatic progress in improving air quality (ARB, 2009).

- Population increased 33 percent and vehicle miles traveled during this same period increased 46 percent.
- Emissions of ROG and NO_x have been reduced by about 57 percent and 34 percent, respectively.
- The number of unhealthy days with concentrations exceeding state ozone standards decreased an average of 36 percent.
- Population exposure to values above the state 8-hour ozone standard of 0.07 ppm decreased by an average of more than 83 percent in major urban areas.
- The entire state now meets all state and national standards, with the exception of ozone and PM. The California annual average PM standards are 20 micrograms per cubic meter ($\mu g/m^3$) for PM_{10} and 12 $\mu g/m^3$ for $PM_{2.5}$.

Despite the magnitude of progress, ozone and PM remain major air quality challenges. Today, nearly all Californians live in areas that are designated as non-attainment for the state (about 99 percent) and national (about 93 percent) health-based ozone and/or PM standards.

- Ozone and PM concentrations in areas with the most severe problems can be as high as two to three times the level of state standards on the worst days.
- In major urban areas with the worst air quality problems, the state ozone and PM standards can be exceeded more than 140 days per year.

ARB gathers air quality data for the State of California, ensures the quality of this data, designs and implements air models, and sets ambient air quality standards for the state. The agency compiles the state's emissions inventory and performs air quality and emissions inventory special studies. ARB uses the emissions inventory and air quality models to evaluate air quality and reduce emissions in each of the local air districts.

The Air Quality Data webpage, http://www.arb.ca.gov/html/ds.htm, provides access to ambient air quality data, maps of areas that violate the national and state air quality standards, and maps of the ambient air quality monitoring network.

Figure 6-2 California Air Districts

ARB maintains an emissions inventory to determine the sources and quantities of air pollution generated within the state's counties and air basins. This information is provided online at: http://www.arb.ca.gov/app/emsinv/emseic1_query.php?F_DIV=-4&F_YR=2008&F_SEASON=A&SP=2009&F_AREA=CA

ARB's 2008 emissions inventory estimates indicate that ROG emissions from composting were approximately 38 tons per day. These emissions accounted for less than 1 percent of total ROG emissions in California.

Greenhouse Gases

Global climate change refers to observed changes in weather features that occur across the Earth, such as temperature, wind patterns, precipitation, and storms over a long period (CAT, 2006; CEC, 2006; CEC, 2008; IPCC, 2007). Global temperatures are modulated by naturally occurring atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide. These gases allow sunlight into the Earth's atmosphere, but prevent radiant heat from escaping, thus altering Earth's energy balance in a phenomenon called the "greenhouse effect". Some GHGs are short lived, such as water vapor, while others such as sulfur hexafluoride, have a long lifespan in the atmosphere.

Earth has a dynamic climate that is evidenced by repeated episodes of warming and cooling in the geologic record. Consistent with a general warming trend, global surface temperatures have increased by 0.74°C ± 0.18°C during the past 100 years (IPCC, 2007). The recent warming trend has been correlated with the global Industrial Revolution, which resulted in increased urban and agricultural centers at the expense of forests and reliance on fossil fuels (CAT, 2006). Eleven of the past twelve years are among the warmest years recorded since 1850 (CEC, 2006). Although natural processes and sources of GHG contribute to warming periods, recent warming trends are attributed to human activities as well (CAT, 2006; CEC 2006). Potential global warming impacts may include, but are not limited to loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, as well as changes in habitat and biodiversity. While the possible outcomes and 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.

GHGs include all of the following naturally occurring and anthropogenic (man-made) gases: carbon dioxide (CO_2), methane (CH_4),nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons, hydrofluorocarbons, and nitrogen trifluoride (NF3) (Health & Saf. Code, § 38505, subd.(g).). Composting operations have the potential to emit CO_2, CH_4, and N_2O. However, CO_2 emissions from composting are mostly biogenic, and are not counted toward current regulatory limits or standards. In fact, composting is considered a benefit, as materials diverted from landfills avoid potential CH_4 produced and emitted by anaerobic decomposition.

In terms of Global Warming Potential (GWP), each of these gases varies substantially from one another. The GWP is a measure of how much a given mass of GHG will contribute to global warming, comparing one GHG to the same mass of CO_2 on a relative scale (CAPCOA, 2009; CAT, 2006; IPCC, 2007). The GWP depends on absorption of infrared radiation by a given species, spectral location of its absorbing wavelengths, and atmospheric lifetime of the species. GHG emissions are measured in units of pounds or tons of CO_2 equivalents (CO_2e). As an example, hydrofluorocarbon contributes 14,800 times as much as CO_2 to the GWP during 100 years. GWP values for key GHGs are summarized in Table 6-2.

Table 6-2 Global Warming Potential of Greenhouse Gases

Gas	Lifetime (years)	Global Warming Potential for 100-year Time Horizon
Carbon Dioxide (CO_2)	50 – 200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
Perfluorocarbons (PFC-14)	50,000	7,300
Hydrofluorocarbons (HFC-23)	270	14,800
Sulfur Hexafluoride (SF_6)	3,200	22,800

SOURCE: IPCC, 2007. Table 2.14. Chapter 2, Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC: http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter2.pdf

The following sections contain a general discussion of the natural and anthropogenic sources of each GHG.

Carbon Dioxide. In the atmosphere, carbon generally exists in its oxidized form as CO_2. Natural sources of CO_2 include animal and plant respiration, ocean-atmospheric exchange, and volcanic eruptions. Anthropogenic sources of CO_2 include combustion of fossil fuels, such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources, and specialized industrial production processes and product uses (i.e., mineral production, metal production, and use of petroleum-based products). The largest source of CO_2 emissions globally is combustion of fossil fuels. Sinks of CO_2 include forests, wetlands, and agriculture. When CO_2 sources exceed CO_2 sinks, the Earth's natural balance is no longer in equilibrium. Since the late 1800s, the concentration of CO_2 in the atmosphere has risen approximately 30 percent (CAT, 2006; CAPCOA, 2009).

Methane. CH_4 in the atmosphere is eventually oxidized, yielding CO_2 and water. Natural sources of CH_4 include, but are not limited to, anaerobic production, wetlands, termites, oceans, CH_4 hydrates (clathrates), volcanoes and other geologic structures, wildfires, and animals. Anthropogenic sources of CH_4 include, but are not limited to, landfills, natural gas systems, coal mining, manure management, forested lands, wastewater treatment, rice cultivation, composting, petrochemical production, and field burning of agricultural residues. In California, agricultural processes contribute significant sources of anthropogenic CH_4 (CAT, 2006; CAPCOA, 2009).

Nitrous Oxide. In the atmosphere, N_2O reacts with ozone. Primary natural sources of N_2O include bacterial breakdown of nitrogen in soils and oceans. Anthropogenic sources of N_2O include fertilizer application, production of nitrogen fixing crops, nitric acid production, animal manure management, sewage treatment, combustion of fossil fuels, and nitric acid production (CAT, 2006; CAPCOA, 2009).

Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride. Hydrofluorocarbons (HFCs) are man-made chemicals containing the element fluorine. Developed as alternatives to ozone-depleting substances for industrial, commercial and consumer products, they are used predominantly as refrigerants and aerosol propellants. Perfluorocarbons (PFCs) are man-made as well, primarily used as replacements to ozone-damaging chlorofluorocarbons and HFCs. Sources include aluminum production and semiconductor manufacturing. Manmade, major releases of SF_6 come from leakage from electrical substations, magnesium smelters, and some consumer goods, such as tennis balls and training shoes. Each of these GHGs possesses a relatively high GWP and long atmospheric lifetimes (CAT, 2006; CAPCOA, 2009).

With enactment of the California Global Warming Solutions Act of 2006 ARB was tasked with producing a GHG emissions inventory and complementary mandatory reporting program to assess and monitor California's progress toward GHG emissions quantification and mitigation. Based on this work, CARB set 471 million tons of CO_2e as the total statewide GHG 1990 emissions level, which is also the 2020 emissions limit.

ARB updated the California GHG inventory for 2000 to 2011, which include estimates for CO_2, CH_4, N_2O, SF_6, nitrogen trifluoride, HFCs, and PFCs. Composting is included as a subset of the recycling and waste management sector that consists mainly of CH_4 and N2O emissions. A copy of the inventory is included as Appendix H. Emissions from this sector grew from 6.9 million tons of CO_2e in 2001 to 7.7 million ton in 2011. Emissions from landfills constitute more than 97 percent of the total sector emissions. Emissions of GHG from composting have remained relatively small during the last eleven years, averaging less than 3 percent of total sector emissions (ARB, 2013).

Toxic Air Contaminants

TACs are airborne substances capable of causing short-term (acute) and/or long-term (chronic and/or carcinogenic) adverse human health effects (i.e., injury or illness). TACs are substances for which federal or state criteria air pollutant standards have not been adopted. Thus, there is no federal or state ambient air quality standard for TACs against which to measure a project's air quality impacts. For this reason, TACs are analyzed by performing a health risk assessment. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources, including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines.

Diesel Particulate Matter (DPM). DPM is a TAC and is the most complex of diesel emissions. DPM, as defined by most emission standards, are sampled from diluted and cooled exhaust gases. This definition includes both solids and liquid material that condenses during the dilution process. The basic fractions of DPM are elemental carbon and heavy hydrocarbons derived from fuel and lubricating oil. DPM contains a large portion of the polycyclic aromatic hydrocarbons found in diesel exhaust. Diesel particulates include small nuclei mode particles of diameters below 0.04 µm and agglomerates with diameters up to 1 µm. DPM is expected to be the TAC of greatest concern generated by the construction and operation of composting operations because it would be emitted outside.

In 2001, ARB assessed statewide health risks from exposure to DPM and to other TACs. Ambient exposures to DPM in California are significant fractions of total TAC levels in the state.

ARB subsequently developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (ARB, 2000). According to this plan, the statewide cancer risk from exposure to diesel exhaust was about 540 per million (i.e., 540 cancers per million people), as compared to a total risk for exposure to all ambient air toxics of 760 per million, as reported in 2000. This estimate of risk from diesel exhaust, which accounts for about 70 percent of the total risk from TACs, included both urban and rural areas in the state. This estimated risk can be considered as an average worst-case for the state, because it assumes constant exposure to outdoor concentrations of diesel exhaust, and does not account for expected lower concentrations indoors, where people spend some of their time.

Ammonia. Ammonia is a TAC and is considered a precursor to $PM_{2.5}$. Ammonia is generated during anaerobic digestion of organic materials, and is therefore of interest in evaluating air quality impacts of the project. Ammonia gas (a base) is known to react with acids in the atmosphere (typically nitric or sulfuric acid) to form ammonium nitrates or sulfates, which are particulates. Although the release of ammonia gas is a participant in formation of ammonium nitrate, it is difficult to forecast how much ammonium nitrate would be created by a release of a certain amount of ammonia. The reaction that forms ammonium nitrate or ammonium sulfate depends on the presence of other chemicals that are in turn part of a complex photochemical process occurring in the atmosphere (including NO_x and oxides of sulfur or SO_x). At the same time, both ammonia and ammonium particulates are subject to removal processes that constantly remove the pollutants from the atmosphere. No health effects have been found in humans exposed to typical environmental (moderate) concentrations of ammonia. In high concentrations, it can severely irritate the eyes, nose, ears, and throat. Lung damage and death may occur after exposure to concentrations of ammonia greater than 300 ppm (CDC, 2014). Individuals with asthma may be more sensitive to breathing ammonia than others.

Odorous Emissions. Composting organic materials can be a source of odor. Although odors rarely cause any physical harm, they still remain unpleasant and can lead to public distress generating complaints. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, wind speed and direction, and the sensitivity of receptors.

Major Source Thresholds

A Major Source is defined by USEPA as a facility that emits, or has the potential to emit any criteria pollutant or hazardous air pollutant (HAP) at levels equal to or greater than Major Source Thresholds. Major Source Thresholds for criteria pollutants may vary depending on the attainment status (i.e. marginal, serious, or extreme) of the geographic area and the Criteria Pollutant or HAP in which the facility is located. Accordingly, USEPA adopted regulations which require states and local permitting authorities to develop and submit federally enforceable operating permit programs for USEPA approval.

All air districts in California have adopted regulations to interface federal permitting requirements with the submitted permit program. Table 6-3 provides a summary of major source thresholds found in the rules of each air district.

Table 6-3 Major Source Thresholds per Air District

APCD/AQMD	POLLUTANT (tons per year)								
	VOC	NO_X	SO_X	CO	PM_{10}	SINGLE HAP	COMBO OF HAPS	Total GHG Emissions	CO_2e
Amador County APCD	50	50	100	100	70	10	25		
Antelope Valley AQMD	25	25	100	100	100	10	25		
Bay Area AQMD	100	100	100	100	100	10	25		
Butte County AQMD	50	50	100	100	70	10	25	100	100000
Calaveras County APCD	100	100	100	100	100	10	25		
Colusa County APCD	100	100	100	100	100	10	25		
Eastern Kern APCD	50	50	100	100	100	10	25		
El Dorado County AQMD	25	25	100	100	100	10	25		
Feather River AQMD	25	25	100	100	100	10	25		
Glenn County APCD	100	100	100	100	100	10	25		
Great Basin APCD	50	50	100	100	70	10	25		
Imperial County APCD	100	100	100	100	70	10	25	100	
Lake County AQMD	50	50	100	100	70	10	25		
Lassen County AQMD	100	100	100	100	100	10	25		
Mariposa County APCD	100	100	100	100	100	10	25		
Mendocino County AQMD	50	50	100	100	70	10	25		
Modoc County APCD	100	100	100	100	100	10	25		
Mojave Desert AQMD - Zone A	25	25	100	100	100	10	25		
Mojave Desert AQMD - Zone B	100	100	100	100	100	10	25		
Monterey Bay Unified APCD	100	100	100	100	100	10	25		100000
North Coast Unified AQMD	50	50	100	100	70	10	25	100	
Northern Sierra AQMD	50	50	100	100	70	10	25		
Northern Sonoma County APCD	50	50	100	100	70	10	25		
Placer County APCD	50	50	100	100	70	10	25	100	100000
Sacramento Metropolitan AQMD	25	25	100	100	100	10	25	100	
San Diego County APCD	50	50	100	100	100	10	25		
San Joaquin Valley APCD	10	10	70	100	70	10	25		
San Luis Obispo County APCD	100	100	100	100	100	10	25		100000
Santa Barbara County APCD	100	100	100	100	100	10	25		100000
Shasta County AQMD	50	50	100	100	70	10	25		
Siskiyou County APCD	100	100	100	100	100	10	25		
South Coast AQMD									
- South Coast Air Basin(a)	10	10	100	50	70	10	25		
- Riverside County Portion of Salton Sea Air Basin(a)	25	25	100	100	70	10	25		
- Riverside County Portion of Mojave Desert Air Basin(a)	100	100	100	100	100	10	25		
Tehama County APCD	50	50	100	100	70	10	25	100	100000
Tuolumne County APCD	50	50	100	100	70	10	25		
Ventura County APCD	25	25	100	100	100	10	25		
Yolo-Solano AQMD	25	25	100	100	100	10	25		

Notes:

1) Criteria pollutant thresholds were found in the district rules regarding Title V or Part 70 permitting.

2) Some Air Districts may regulate over multiple air basins. In these cases, thresholds may be different depending on the specific project location and area designation.

Estimated Emission from New or Modified Compost Operation

To provide perspective on potential air impacts of activities that may occur in implementing the General Order, two recent projects in California were examined that have been subject to a comprehensive CEQA analysis. These projects provide a reasonable estimate of emissions from a new or modified composting operation.

San Bernardino County - The first project was undertaken for an operation in San Bernardino County, titled Nursery Products Hawes Composting Facility. The Draft EIR was released for public review in 2006, and is available at http://www.sbcounty.gov/Uploads/lus/Desert/1-draftSEIRNurseryProductsHawesCompostingFacility.pdf. The Final EIR was certified in February 2007.

The Nursery Products Hawes Composting Facility was designed to process feedstocks consisting of biosolids and green waste materials located on a 160-acre parcel. The operation is expected to receive a maximum daily average of 1,100 tons (400,000 tons per year) of biosolids and green waste material to produce agricultural compost. The operation would likely meet Tier II requirements of the General Order. The size of each windrow-shaped pile may vary, with the height not to exceed 12 feet, the width not to exceed 30 feet, and the length not to exceed 1,000 feet. In lieu of a pad, the operation chose to monitor groundwater annually. The operation has a plan to incorporate a compacted pad if it is determined that water quality standards are not met.

The operation also collects storm water and leachate in surface impoundments that meet California Code of Regulations, title 27 standards for a Class II surface impoundment. The detention ponds must be designed to contain run-off from a 100-year, 24-hour storm event plus the amount of rainfall directly into the impoundment from a 1,000-year, 24-hour event. Construction must consist of the following in ascending order: 6-inch re-compacted native subgrade to 90 percent maximum dry density; leak detection monitoring sump consisting of geosynthetic clay and 60-mil high-density polyethylene (HDPE) liner; and geosynthetic clay and 60-mil HDPE with filter fabric and ultraviolet protection. This construction is expected to meet the requirements of the General Order.

The estimated maximum daily emissions for the construction phase for this operation are listed in Table 6-4 below.

Table 6-4 Initial Construction Daily Emissions, San Bernardino County

Construction Activity (Phase 1)	Daily Emissions (pounds per day)				
	CO	ROC	NO_X	SO_X	PM_{10}
Equipment Exhaust	10.49	2.73	33.94	5.98	1.55
Fugitive Dust					33.18
On-Road Vehicle Combustion	3.32	0.14	0.37	0.00	0.03
Total Construction Emissions	**13.81**	**2.87**	**31.31**	**5.98**	**34.76**
MDAQMD Threshold	*548*	*137*	*137*	*137*	*82*

Source: Draft Environmental Report Nursery Products Hawes Composting Facility, State Clearinghouse No. 200605102, September 2006

As can be seen in Table 6-4, daily emissions ranged from two orders of magnitude below to less than half of the applicable significant thresholds in the Mojave Desert AQMD, and thus would not be designated a significant risk.

Sonoma County - The second project entailed modifications to the existing Sonoma County Waste Management Agency Composting Facility. Three sites proposed for expansion were analyzed in the EIR. The Draft EIR was released to the public in December 2011, and the Final EIR was released in April 2013. Full transcripts of the EIR can be found at http://www.recyclenow.org/agency/reports.asp.

At project inception, design parameters included processing of up to 200,000 tons of feedstock per year on up to 70 acres of a 100-acre site. To meet water quality requirements the facility would have a 32 acre-foot water retention pond with a capacity for a 100-year storm event. An 8-foot high levee was also designed to surround the operation to prevent run-on into the composting operation. Table 6-5 shows the estimated emissions from construction activities.

Table 6-5 Peak Day Construction-Related Daily Emissions, Sonoma County

	Daily Emissions (pounds per day)					
Year	**ROG**	**NO_X**	**CO**	**SO_2**	**Exhaust PM_{10}[b]**	**Exhaust $PM_{2.5}$[b]**
2010 Unmitigated Emissions	9	69	39	<1	4	4
2010 Mitigated Emissions	9	58	39	<1	2	2
BAAQMD Construction Threshold	*54*	*54*	*None*	*None*	*82*	*54*
Significant Impact?	No	Yes	No	No	No	No

a. Emissions were modeled using URBEMIS2007 and assuming 17.5 acres of the total 70-acre site would be disturbed on the worse-case day. Default URBEMIS2007 equipment assumptions were assumed for construction. 100,000 cubic yards of soil was assumed to be imported for berm development. Construction activities were assumed to occur for a duration of one year. Additional information is included in Appendix AIR-1.

b. BAAQMD's proposed construction-related significance thresholds for PM10 and PM2.5 apply to exhaust emissions only and not to fugitive dust.

c. Mitigation measures were incorporated into the URBEMIS2007 model as surrogates for the Basic and Additional Control Measures.

Source: Sonoma County Waste Management Agency Compost Facility, Draft Environmental Impact Report, State Clearinghouse #: 2008122007, December 2011

GHG emissions from the 200,000 tons per year Sonoma County Waste Management Agency facility were evaluated in the EIR prepared for that facility. It was estimated that GHG emissions from the facility approached 3,000 tons per year, which exceeded the threshold of significant in the Bay Area AQMD. However, off-road engines (both stationary and mobile) contributed only about 25 percent of the GHG emissions. To mitigate emissions, the Sonoma facility decided to develop a GHG inventory and reduction plan, and to operate as much equipment as possible on electricity. Excess emissions that could not

be reduced below the Bay Area AQMD significance threshold of 1,100 tons per year would require purchase of offsets.

Table 6.5 indicates that NO_x was the only criteria pollutant that exceeded the significant threshold in the Sonoma project (ESA, 2011). It was concluded in the Sonoma EIR that even with an extensive list of mitigation measures (use of BACT, a project-wide reduction of 20 percent for NO_x), some construction emissions would be considered significant and unavoidable.

The operations studied were rated for 200,000 tons and 400,000 tons of waste per year; this volume would represent a mid and large size operation built in California. Although it is not possible to calculate potential construction emissions of a new project at a statewide level, these facilities can give a reasonable representation of the emissions potential. Results similar to emissions predicted in these two EIRs are anticipated for new construction projects.

Project-specific environmental review will likely need to be conducted for each individual project so that local agencies can determine appropriate mitigation measures.

6.2. ENVIRONMENTAL ANALYSIS

6.2.1. Approach and Methods

The following evaluation of air quality and GHG impacts was prepared by considering potential locations, applicable regulations and guidelines, and typical construction activities and operations that would be attributable to the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential significant impacts to air quality and GHG takes into consideration the questions in Appendix G of the CEQA Guidelines and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific air quality studies that could include further modeling or analysis of these particular air quality and GHG impacts on a project-by-project basis.

6.2.2. Thresholds of Significance

The “thresholds of significance” for a given environmental effect is that level at which the lead agency finds effects of the project to be significant. The threshold can be defined as a

quantitative or qualitative standard, or a set of criteria, pursuant to which the significance of a given environmental effect may be determined.

According to Appendix G of the CEQA Guidelines, a project would have a significant effect on air quality or associated with GHG if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any non-attainment pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG.

6.2.3. Impacts and Mitigation Measures

Impact 6.1. Compliance with the General Order at composting operations may have the potential to conflict with or obstruct implementation of an applicable air quality plan.

The General Order requires composting operations to manage wastewater using options such as detention ponds, storage tanks, or treatment facilities. The most likely scenario for a composting operation to conflict with any applicable air quality plan would be during grading activities for modification of existing or construction of new composting operations. Construction activities such as excavation, grading, and trenching have the potential to produce a temporary increase in criteria air pollutants and TACs from the use of construction equipment.

Proposed development of modified or new composting operations would be required to secure local land use approvals prior to construction. Part of the development review and approval process requires that projects undergo environmental review consistent with CEQA and other applicable local requirements. This environmental review process would include an assessment of whether project implementation would result in short-term construction air quality impacts.

At this time, the specific type, size, and number of construction activities would be dependent upon a variety of factors not within the control of the State Water Board. Nonetheless, the analysis presented herein provides a good-faith disclosure of the types of construction emission impacts that could occur with the implementation of reasonably foreseeable compliance responses for near-term measures in this analysis.

During the construction phase, criteria air pollutants and DPM could be generated from a variety of activities and emission sources. These emissions would be temporary and occur intermittently depending on the intensity of construction on a given day. Site grading and

excavation activities may generate fugitive PM (dust) emissions, which is the primary pollutant of concern during construction. Fugitive PM emissions (including PM_{10} and $PM_{2.5}$) vary as a function of several parameters, including soil silt content and moisture, wind speed, size of area disturbed, and the intensity of activity performed by the construction equipment. Exhaust emissions from off-road construction equipment, material delivery trips, and construction worker-commute trips could also contribute to short-term increases in DPM emissions. Exhaust emissions from construction-related mobile sources also include ROG and NO_x emissions. Both the type and magnitude of emissions will vary depending on the equipment type, number, and duration of usage.

The site preparation phase typically generates the most emissions because of the on-site equipment and ground-disturbing activities associated with grading, compacting, and excavation. Typical site preparation activities related to the General Order are expected to involve construction of a working surface (pad), wastewater detention pond or storage tank, or alternative wastewater treatment system of varying sizes.

Site preparation equipment and activities typically include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Although it would be speculative to estimate detailed construction information at any particular composting operation, based on the types of activities that could occur, it would be expected that the primary source of construction related emissions would come from the soil disturbance and equipment-related activities (e.g., use of backhoes, bulldozers, excavators, and other related equipment). Based on typical emission rates and other parameters for the above mentioned equipment and activities, construction activities could result in several hundred pounds per day of NO_x and PM, which may exceed general mass emissions limits of a local or regional air quality management district depending on the site location.

Thus, implementation of the General Order could result in temporary air emissions at levels that may conflict with applicable air quality plans, exceed or contribute to existing or projected limits, result or contribute to a net increase in non-attainment areas, or expose sensitive receptors to significant substantial pollutant concentrations. As a result, this short-term construction-related air quality impact is potentially significant.

Mitigation Measure 6.1. It is expected that the project specific CEQA analysis would provide specific measures that the operation could implement to reduce construction emissions. Based on results of the environmental review, project applicants would be required to implement all feasible mitigation identified in the environmental document to reduce or substantially lessen construction-related air quality impacts of the project.

Examples of recognized and accepted measures that are routinely required by regulatory agencies include: :

- Apply for, secure, and comply with all appropriate air quality permits for project construction from the local agencies with air quality jurisdiction, and from other applicable agencies, if appropriate, prior to construction mobilization;
- Comply with the Clean Air Act and the California Clean Air Act (e.g., New Source Review and BACT criteria, if applicable);

- If located in PM non-attainment areas, prepare and comply with a dust abatement plan that addresses emissions of fugitive dust during construction and operation of the project. Examples of specific mitigation measures include, but are not limited to:
    - Comply with the Off-Road Regulation for in-use off-road vehicles to meet DPM fleet averaging standards;
    - Use DPM filters to further reduce DPM tailpipe emissions from operation of diesel fueled equipment during construction. Cost effective mitigation options for reduction of PM emissions from diesel fueled engines are available and in use at construction and demolition operations;
    - Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (as required by the state airborne toxics control measure [Cal. Code Regs., tit. 13, §2485].);
    - Provide clear signage that posts this requirement for workers at entrances to the site.

The State Water Board does not have authority to require implementation of mitigation related to the air quality impacts of existing or new composting operations approved by local authorities. The ability to require such measures is within the purview of jurisdictions with local land use approval and/or permitting authority. Because authority to determine project-level impacts and to require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and analysis associated with this emissions assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

Even with mitigation, construction emissions could still exceed local air district threshold levels of significance, depending on the magnitude of construction activities.

Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that air quality impacts resulting from modification of existing operations for new operations to comply with the General Order could be potentially significant and unavoidable.

Impact 6.2. Compliance with the General Order at composting operations may have the potential to violate air quality standards or contribute substantially to an existing or project air quality violation.

For the reasons stated in Impact 6.1, temporary air quality impacts resulting from compliance with the General Order could be potentially significant.

Mitigation Measure 6.2. See Mitigation Measure 6.1.

Impact 6.3. Compliance with the General Order at composting operations may have the potential to result in considerable net increase of any non-attainment pollutant for which the project region is under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Under the General Order, detention ponds would be required to maintain a dissolved oxygen concentration of at least 1.0 mg/L to prevent anaerobic conditions, which would likely require use of a stationary aeration engine. Existing and new composting operations may opt to utilize stationary engines such as diesel-fueled water pumps to comply with aeration and water management requirements of the General Order. Water pumps may be required to transfer water throughout the operation to comply with water management requirements of the General Order. Stationary engines could increase emissions at the operation.

The specific location, type, size, and number of stationary engine installations would be dependent upon a variety of factors that are not within the control of the State Water Board. Nonetheless, the analysis presented herein provides a good-faith disclosure of the types of stationary engine impacts that could occur with implementation of reasonably foreseeable compliance responses for near-term measures in this update. Further, subsequent environmental review would likely be conducted at such time that a new composting operation is proposed.

Table 6-6 below shows estimated emissions from 250, 500 and 1,000 horsepower (hp) stationary diesel fuel engines, based on current regulatory requirements under the Stationary Diesel Engine Air Toxic Control Measure (ATCM). Table 6-6 presents worst case emissions based on the conservative assumption that aerators must operate continuously for non-methane hydrocarbons (NMHC), NO_x, CO, and PM.

Table 6-6 Emissions from Stationary Diesel Engines with Continuous Operation (Pounds/Year)

	250 hp Emissions	500 hp Emissions	1,000 hp Emissions
NMHC	675	1,350	5,800
NO_x	7,200	14,400	9,650
CO	12,500	25,000	50,200
PM	50	100	200

Stationary engines used at composting operations could come in three forms: diesel-fueled, natural gas or propane fueled, or electric. Stationary diesel engines would be required to comply with the state's Stationary Engine Air Toxic Control Measure or local district rules, whichever is more stringent. This would require the cleanest diesel engine available equipped with a diesel particulate filter. Spark ignited engines would fall under the federal Stationary Source New Source Performance Standards. Local air districts could also have local rules that are more stringent for spark ignited engines. Finally, electric engines could be used to run pumps and aeration systems. Electric engines would eliminate air emissions from stationary sources; however, not all locations may have electricity available.

Mitigation Measure 6.3. Examples of Recognized and accepted measures that are routinely required by regulatory agencies include:

- Comply with the federal and California Clean Air Acts. New or modified composting operations that install stationary engines to comply with the General Order would need to follow the local air district's New Source Review policy and all local air quality regulations. A new stationary engine would need a permit with the local air district to ensure that it meets all BACT requirements for districts in non-attainment areas and PSD for districts in attainment areas. Local air districts can limit the amount of operational hours to ensure emissions do not exceed significant levels;
- Based on results of the environmental review, applicants would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen operation-related air quality impacts of the project. This could require purchase of offsets for pollutants that exceed threshold levels in the district;
- Use electric engines where feasible;
- Require diesel engines to be equipped with diesel particulate filters.

It is anticipated that project-specific impacts and mitigation would be identified during environmental review by agencies with project-approval authority

The State Water Board does not have the local land use authority to approve modifications to existing or new composting operations, and does not have the authority to impose mitigation measures as described above. Even with mitigation, stationary engine emissions could exceed local air district threshold levels of significance, depending on operation requirements. Consequently, air quality impacts resulting from the modification of existing operations or development of new operations could be potentially significant and unavoidable.

Impact 6.4. Compliance with the General Order at composting operations may have the potential to lead to exposure of sensitive receptors in the vicinity of substantial pollutant concentrations from stationary and mobile sources.

Emissions of toxics (i.e., DPM) can occur from diesel-fueled equipment used for site preparation and construction activities to modify or construct composting operations, in compliance with requirements of the General Order. Large construction projects may last many months, result in significant levels of diesel PM emissions, and possibly result in significant health risks. The nearest sensitive receptors must be included in the modeling analysis to determine worst case impacts from construction activities.

Impacts from operation of the improvements can be determined by comparing the operation's pre- and post-project emissions. Air toxics emissions from operations could include trace amounts of air toxics (primarily hydrogen sulfide and ammonia) that may be released as fugitives from wastewater handling systems and DPM from diesel vehicles or equipment at the operation.

Health impacts from exposure to toxic emissions related to these improvements are dependent on concentrations the public can be exposed to, as well as relative toxicities of individual pollutants released. Exposure levels are determined by conducting dispersion modeling of estimated toxics emissions from typical proposed operation sources (described above) by using a screening model, such as the USEPA SCREEN3 model (USEPA, 1995). The SCREEN3

model predicts possible worst-case impacts by using hypothetical worst-case meteorology. For calculating more accurate site-specific impacts at composting operations, the USEPA AERMOD model can be used. AERMOD uses meteorological data representative of the site, as well as multiple toxic emission source types, such as point, area, or volume to represent the emission sources.

For a screening analysis, cancer and non-cancer health risks can be calculated by applying algorithms in the document published by California Office of Environmental Health Hazard Assessment (OEHHA) to calculate health risks (OEHHA, 2003). For more accurate site specific risks, AERMOD can be run in conjunction with the ARB model, Hot Spots Analysis Reporting Program (HARP) to estimate cancer and non-cancer health risks the public can be exposed to (ARB, 2010). HARP uses the same toxicity values as in the OEHHA Risk Assessment Guidelines, and incorporates multi-pathway uptake factors for various toxic species to calculate risks.

Estimated cancer risks from estimated emissions are then compared to applicable AQMD or APCD significance thresholds to determine if impacts from the scenarios evaluated might result in significant impacts to the public. In addition, Hazard Quotients are estimated for non-carcinogens in HARP to determine if modeled exposure levels exceed established health thresholds, called Reference Exposure Levels (RELs). Estimated risks for various wastewater-handling systems can be used to estimate health risks, and for those scenarios with unacceptable risks, mitigation measures are applied to determine if projects can achieve acceptable health risks to the public. In analysis of the site, cancer risk should not exceed ten in one million chances, and the non-cancer Health Index should not exceed one. Because site-specific exposure rates and information necessary to evaluate health risks associated with composting operations are not known, this impact is considered potentially significant.

As an example, dispersion modeling using AERMOD for the Sonoma County Waste Management Compost Facility EIR suggested that implementation of this project could result in a cancer risk of 4.9 and 3.8 chances per million for a worker and resident, respectively. These values are below the Bay Area AQMD cancer risk significance threshold of 10-5. The chronic Hazard Index was 0.031 and 0.0047 for the worker and resident, respectively, which are less than Bay Area AQMD's significant risk threshold of one. The acute risk was 1.59 for the worker, which exceeds the significance risk threshold. The acute risk for the resident was 0.15 which is less than significant. The biggest contributor to acute risk was ammonia from the composting piles. With application of biofilters or an aerated static pile, risk was reduced to less than significant.

Based on this analysis, it is unlikely that the addition of one or multiple stationary engines due to the General Order's requirements will cause an elevated risk. Therefore, this impact may be reduced to less than significant with implementation of mitigation measures, beyond the authority of the State Water Board.

Mitigation Measures 6.4. Based on the analysis in Impact 6.4, mitigation would be required if the health risk exceeds the significance threshold in the corresponding air district. Examples of recognized and accepted measures that are routinely required by regulatory agencies include:

- See Mitigation Measure 6.1;
- If DPM is a major contributor, composting operations may implement one or more of the following requirements, where feasible and appropriate:
    - Use either new diesel engines designed to minimize DPM emissions (usually through use of catalyzed particulate filters in the exhaust) or retrofit older engines with catalyzed particulate filters (which will reduce DMP emissions by 85 percent);
    - Use electric equipment powered by the grid, which would eliminate local combustion emissions;
    - Use alternative fuels, such as compressed natural gas or liquefied natural gas.
- Follow proper safety protocol. Use signage onsite to remind workers to follow procedures and minimize exposure risk.

The State Water Board does not have the authority to approve modifications to existing or construction of new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts to sensitive receptors resulting from use of stationary engines may be unavoidable.

Impact 6.5. Compliance with the General Order at composting operations may have the potential to create objectionable odors affecting a substantial number of people.

Factors that affect odor impacts include the design of the wastewater handling system, sensitive receptor proximity, and exposure duration. Odorous compounds such as ammonia and hydrogen sulfide can be generated from wastewater if it goes anaerobic.

CalRecycle has jurisdiction over odors at compost operations. Composting operations are required to create an Odor Impact Minimization Plan to minimize odor impact to surrounding residents. The CalRecycle minimum standard (Cal. Code Regs., tit. 14, § 17867 subd.(a)(2)) for odor requires that "*All handling activities shall be conducted in a manner that minimizes vectors, odor impacts, litter, hazards, nuisances, and noise impacts; and minimizes human contact with, inhalation, ingestion, and transportation of dust, particulates, and pathogenic organisms."* The local air districts could also be contacted if there are immediate concerns about odor. Many districts have a complaint line to facilitate a quick response to odor complaints; however, districts must work with CalRecycle for final action requirements to mitigate odor issues.

The siting of composting operations and locations of odor sources could affect the occurrence of objectionable odors at off-site receptors in the vicinity, and would be dependent upon a variety of factors not within the control of the State Water Board. Consequently, the potential impact of objectionable odors is significant.

- **Mitigation Measures 6.5.** Examples of recognized and accepted measures that are routinely required by regulatory agencies include: Design operations in compliance with

appropriate local land use plans, policies, and regulations, including applicable setbacks and buffer areas from sensitive land uses for potentially odoriferous processes;

- Require Tier II operations to operate and maintain wastewater-holding facilities at or above a dissolved oxygen limit of 1.0 mg/L to prevent anaerobic conditions in wastewater;
- Develop and comply with an Odor Impact Minimization Plan pursuant to the requirements of California Code of Regulations, title 14, section 17863.4.

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts.

Even with mitigation, odors could exceed local standards and create an impact on local residents. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses for CEQA compliance purposes, that odor impacts resulting from development of new operations or modification of existing operations could be potentially significant and unavoidable.

Impact 6.6. Compliance with the General Order at composting operations may have the potential to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

Construction activities such as excavation, grading, and trenching to modify or construct new composting operations for implementation of the General Order have the potential to generate GHG emissions from the use of construction equipment.

However, there is uncertainty as to the extent of reconstruction or modification of existing operations, or the location or scale of any new operations. Typical earth-moving equipment that may be necessary for construction includes: graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. Specific, project-related construction activities could result in increased generation of GHG emissions associated with the use of heavy-duty off-road equipment, materials transport, and worker commutes. Construction-related activities are expected to be short-term and emissions limited in amount.

Local agencies, such as air pollution control districts, are generally charged with determining acceptable thresholds of GHG emissions, measured as million metric ton CO_2e per year. Quantification of short-term construction-related GHG emissions is generally based on a combination of methods, including use of exhaust emission rates from emissions models, such as OFFROAD 2007 and EMFAC 2011. These models require consideration of assumptions, including construction timelines and energy demands (e.g., fuel and electricity). However, a majority of local agencies (such as, AQMD or APCD) do not recommend or require quantification of short-term construction-generated GHGs for typical construction projects, because these only occur for a finite period of time (i.e., during periods of construction) that is typically much shorter than the operational phase. Thus, agencies generally recommend that GHG analyses focus on operational phase emissions, as discussed below, unless the project is of a unique nature requiring atypical (e.g., large scale, long- term) activity levels (e.g.,

construction of a new dam or levee) for which quantification and consideration (e.g., amortization of construction emissions over the lifetime of the project) may be recommended.

As discussed above, implementation of the General Order could require construction of new and/or modified surfaces or operations resulting in construction-generated GHG emissions. However, the level of construction activity would be considered typical and only occur for a finite period of time (e.g., during periods of construction) that is much shorter than the operational phase of this measure. Therefore, as discussed in Impact 6.6, this analysis focuses on the operational phase, which would outweigh construction emissions based on comparison of the associated time frames, and is consistent with current local agency recommendations (e.g., air pollution control districts).

During the operational phase, compliance with the General Order may result in an increase in emissions from stationary engines at composting operations for water management and pond aeration requirements. GHG emissions from diesel engines depend on the horsepower of the engine and fuel consumption. An analysis of stationary engines at the specific project location will have to be done to verify that they do not exceed any local district policy and regulations.

Emissions resulting from compliance with the General Order are expected to be minimal compared to emissions from the composting operation as a whole. However, depending on the location, size and scale of the operation and the method of compliance selected, this impact has the potential to be significant.

Mitigation Measure 6.6. Local districts may require compost operations to meet GHG emissions requirements. Mitigation would be required If GHG emissions exceed the significance threshold in the corresponding air district. The following are recognized measures that composting operations could implement to reduce GHG emissions. A project specific CEQA analysis or local authority would provide specific measures to reduce its GHG emissions.

As these mitigation measures vary depending on the air district, Examples of recognized and accepted measures that are routinely required by regulatory agencies include:

- Use electric engines, if electricity is available at the site, to eliminate on-site GHG emissions from stationary engines that are required for water management and aeration;
- Follow offset protocols to create carbon credits to balance emissions from stationary sources. Offset emissions would have to be real, verifiable, and permanent to qualify;
- Fund local projects that result in GHG reductions and credit the carbon credits achieved to the operation;
- Purchase available offset credits that were previously captured from another source and available for purchase in an approved carbon registry.

The State Water Board does not have the authority to approve modifications to existing or new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts.

Even with mitigation, GHG emissions may exceed threshold requirements for the local air district. Consequently, the EIR takes a conservative approach in its post-mitigation significance

conclusion and discloses for CEQA compliance purposes, that GHG emission impacts could be potentially significant and unavoidable.

Impact 6.7. Compliance with the General Order at composting operations may have the potential to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs.

It is reasonably foreseeable that compliance responses for new and existing composting operations would be consistent with applicable land use policies and local regulations, including air district policies. However, for the reasons stated in Impact 6.6., compliance with the General Order at composting operations, may have the potential to be significant.

Mitigation Measure 6.7. See Mitigation Measure 6.6.

Impact 6.8. Development of new composting operations, unrelated to the General Order, may have the potential to conflict with or obstruct implementation of the applicable air quality plan; violate any air quality standard or contribute substantially to an existing or projected air quality violation; result in a cumulatively considerable net increase of any non-attainment pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors); expose sensitive receptors to substantial pollutant concentrations; create objectionable odors affecting a substantial number of people; generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG policy or regulation adopted for the purpose of reducing GHG emissions.

New composting operations may be constructed and located anywhere within the state. The State Water Board cannot speculate on how many or where new composting operations will be constructed. Generally, construction activities related to development of new composting operations, especially new large-scale commercial facilities, may consist of construction of large composting operations pads, access roads, or buildings. Construction of a new composting operation, unrelated to the General Order, is likely to require substantially more disturbance of undeveloped areas resulting in air resource and greenhouse gas impacts, compared to construction activities related to the General Order.

It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific greenhouse gas and air quality related impacts can be fully analyzed and project specific mitigation measures can be properly identified.

The air quality and GHG impacts from the development of new operations, unrelated to the General Order, are similar in nature to those discussed in Impacts 6.1 to 6.6, and have the potential to be significant.

Mitigation Measures 6.8. *Recognized actions that may be required by regulatory agencies may consist of mitigation measures similar to those identified in Mitigation Measures 6.1. through 6.6.*

The State Water Board does not have the authority to impose mitigation measures as described above. Even with mitigation, it is possible that activities related to construction of new composting operations, unrelated to the General Order, may have the potential to conflict with air quality or GHG emission standards. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, air quality and GHG impacts resulting from new compost operations, unrelated to the General Order, may be significant and unavoidable.

7. BIOLOGICAL RESOURCES

This chapter describes existing biological resources in California and analyzes potential impacts that may occur from compliance with the General Order.

7.1. ENVIRONMENTAL SETTING

A great diversity of vegetation and wildlife resources exist in California across a broad range of physiographic regions, from the coast, inland across mountain ranges and valleys, to deserts along the eastern border. California contains examples of most of the major biological provinces, or biomes, in North America, including grassland, shrub land, deciduous forest, coniferous forest, alpine tundra, mountains, deserts, temperate rainforest, marine, estuarine, and freshwater habitats. Each of these biomes contains many different types of plant communities, such as redwood forests, vernal pool wetlands, or blue oak woodlands.

California has a great number of animal species, representing large portions of wildlife species nationwide. The state's diverse natural communities provide a wide variety of habitat conditions for wildlife. A complete list of amphibians, reptiles, birds, and mammals present in California (last updated in 2008) is provided by California Department of Fish and Wildlife (DFW) and is included in Appendix I. Subspecies are not included on this list. The most current list of species and subspecies with special management status for specific locations is available from the California Natural Diversity Database (CNDDB). The CNDDB is a continually refined and updated computerized inventory of location information on the most rare animals, plants, and natural communities in California.

The varied habitat types within California are conducive to a great diversity of plant and animal species, many of which are endemic to the state. Because of habitat conversion to agriculture, residential and commercial development many species have become rare, threatened, or endangered (DFW 2013a, 2013b). For example, 220 plant species have been state listed as endangered, threatened, or rare under Fish and Game Code section 1904 (enacted by the Native Plant Protection Act of 1977) and sections 2074.2 and 2075.5 (enacted by the California Endangered Species Act of 1984). Also, 186 plant species have been federally listed as endangered or threatened under the federal Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq.). Additionally, 149 species of animals have been state or federally listed as threatened or endangered and 13 animal species are classified as candidates for state listing or proposed for federal listing.

The DFW also prepares a list of state and federally listed endangered and threatened plants and animals in California. The most recent list of representative endangered, threatened, and rare plants dated July 2013 and the recent list of representative endangered and threatened animals dated October 2013 is included in Appendix I. Representative special-status wildlife and plant species for California including geographical distribution and habitats are also included in Appendix I. Additional special plant and animal lists can be accessed at http://www.dfg.ca.gov/wildlife/nongame/list.html.

7.2. ENVIRONMENTAL ANALYSIS

7.2.1. Approach and Methods

The following evaluation of biological resource impacts was prepared by considering applicable regulations and guidelines, and typical construction activities and operations that would be attributable to the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential significant impacts to biological resources takes into consideration the questions in Appendix G of the CEQA Guidelines and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order, and a summary of possible impacts from development of new composting operations, unrelated to the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including studies that could include further analysis of these particular biological resource impacts on a project-by-project basis.

7.2.2. Thresholds of Significance

An impact related to biological resources is considered significant if it would result in any of the following issues:

- 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.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service.
- Have a substantial adverse effect on federally protected wetlands 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.
- 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 impede the use of native wildlife nursery sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

7.2.3. Impacts and Mitigation Measures

Impact 7.1. Compliance with the General Order at composting operations may have the potential to 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 US Fish and Wildlife Service.

Implementation of responses attributable to the General Order that expands the active foot print at composting operations may pose a potentially significant impact to biological resources. Compliance responses could include land grading to improve existing surfaces or detention ponds, expand existing pond capacity, construct new detention ponds, or change the wastewater handling system. It is also possible that incidental new structures, such as ancillary buildings, covered shelters, or onsite utility lines may be constructed to accommodate some improvements.

Most existing composting operations are on sites that have been subjected to severe disturbance including grading, trenching, paving, and construction of roads and structures. Daily activities often include the presence of personnel, movement of automobiles, trucks, and heavy equipment, and operation of stationary equipment. Additional activities in response to the General Order at are not expected to substantially increase these impacts. New composting operations would be subject to construction and operational disturbances, as summarized in Appendix E from actual projects that are incorporated by reference.

The environment of a composting operation is not considered conducive to many biological resources. Vegetation is often removed or controlled and wildlife displaced to more suitable surroundings. Construction of new ponds could interfere with migratory bird patterns or create a new resting place for migrating birds. Ponds may be a hazard for terrestrial and non-terrestrial animals from being trapped due to slippery liner surfaces or from drinking the water which may contain concentrated pollutants. Nonetheless, there are plant and animal species that live, or even thrive in developed settings. Therefore, activities which require disturbance of undeveloped areas, such as expansion of detention ponds or construction of buildings, trenching for drainage or utility lines, or paving, may have the potential to adversely affect plant or animal species that may reside in those areas.

Consequently, construction activities that disturb undeveloped areas may have the potential to pose a significant impact to biological resources.

Mitigation Measure 7.1. Examples of recognized and accepted measures that areroutinely required by regulatory agencies include:

- Preparation of a biological inventory of site resources by a qualified biologist prior to ground disturbance or construction. If protected species or their habitats are present, comply with applicable federal and state endangered species acts and regulations. Ensure that

important fish or wildlife movement corridors or nursery sites are not impeded by project activities;

- Preparation of a wetland survey of onsite resources. Establish setbacks and prohibit disturbance of riparian habitats, streams, intermittent and ephemeral drainages, and other wetlands. Wetland delineation is required by section 303(d) of the Clean Water Act administered by the USACE;
- Prohibit construction activities during the rainy season with requirements for seasonal weatherization and implementation of erosion prevention practices;
- Prohibit construction activities in vicinity of raptor nests during nesting season or establish protective buffers and provide monitoring as needed to ensure that project activity does not cause an active nest to fail;
- Prepare site design and development plans that avoid or minimize disturbance of habitat and wildlife resources, as well as prevent storm water discharge that could contribute to sedimentation and degradation of local waterways. Depending on disturbance size and location, a NPDES construction permit may be required from the State Water Board;
- Plant replacement trees and establish permanently protected suitable habitat at ratios considered acceptable to comply with “no net loss” requirements.

The State Water Board does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts to biological resources resulting from site disturbance activities may be unavoidable.

Impact 7.2. Compliance with the General Order at composting operations may have the potential to have a substantial adverse effect on riparian habitat, or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service.

For the reasons stated in the discussion of Impact 7.1, this impact has the potential to be significant..

Mitigation Measure 7.2. See Mitigation Measure 7.1.

Impact 7.3. Compliance with the General Order at composting operations may have the potential to have a substantial adverse effect on federally protected wetlands 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.

For the reasons stated in the discussion of Impact 7.1, this impact has the potential to be significant.

Mitigation Measure 7.3. See Mitigation Measure 7.1.

Impact 7.4. Compliance with the General Order at composting operations may have the potential to 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 impede the use native wildlife nursery sites.

For the reasons stated in the discussion of Impact 7.1, this impact may have the potential to be significant.

Mitigation Measure 7.4. See Mitigation Measure 7.1.

Impact 7.5. Compliance with the General Order at composting operations may have the potential to conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance.

For the reasons stated in the discussion of Impact 7.1, this impact may have the potential to be significant.

Mitigation Measure 7.5. See Mitigation Measure 7.1.

Impact 7.6. Compliance with the General Order at composting operations may have the potential to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan.

For the reasons stated in the discussion of Impact 7.1, this impact may have the potential to be significant.

Mitigation Measure 7.6. See Mitigation Measure 7.1.

Impact 7.7. Development of new composting operations, unrelated to the General Order, may have the potential to 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 US Fish and Wildlife Service; have a substantial adverse effect on riparian habitat, or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service; have a substantial adverse effect on federally protected wetlands 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; 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 impede the use of native wildlife nursery sites; conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance; or conflict with the provisions of an adopted Habitat Conservation Plan,

Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan.

New composting operations may be constructed and located anywhere within the state, consistent with local land use regulations. The State Water Board cannot speculate on how many or where new composting operations will be constructed.

It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific biological resources impacts can be fully analyzed and project specific mitigation measures can be properly identified. It is further anticipated that compliance responses would be consistent with local zoning ordinances establishing design guidelines such as minimum setbacks, maximum height requirements, maximum density, and/or landscaping requirements.

Generally, construction activities related to development of new composting operations, especially new large-scale commercial operations may consist of construction of large composting operations pads, access roads, or buildings. Construction of a new composting operation, unrelated to the General Order, is likely to require substantially more disturbance of undeveloped areas, compared to construction activities related to the General Order.

The impacts of such disturbance may be similar to those described in Impact 7.1 and consequently pose a potentially significant impact to biological resources. Therefore, impacts resulting from development of new composting operations, unrelated to the General Order, may be significant.

Mitigation Measure 7.7. *Recognized practices routinely required to avoid and/or minimize impacts to cultural resources have been discussed in Mitigation Measure 7.1.*

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that biological resources impacts resulting from new composting operations, unrelated to the General Order, may be significant and unavoidable.

8. CULTURAL RESOURCES

This chapter describes existing cultural resources in California and analyzes potential impacts that may occur from compliance with the General Order.

8.1. ENVIRONMENTAL SETTING

Cultural resources include archaeological sites of prehistoric or historic origin, built or architectural resources older than 50 years, traditional or ethnographic resources, and fossil deposits of paleontological importance. America has a cultural heritage that dates back 25,000-60,000 years ago, when the first known inhabitants of the land that would eventually become the United States crossed the Bering Land Bridge into Alaska.

All areas within the United States have potential for yielding undiscovered archaeological resources, paleontological resources, and undocumented human remains not interred in cemeteries or marked formal burials. These resources have the potential to contribute to knowledge of the fossil record or local, regional, or national prehistory or history.

Archaeological resources include both prehistoric and historic remains of human activity. Built environment resources, include an array of historic buildings, structures, and objects serving as a physical connection to America's past. Traditional or ethnographic cultural resources may include Native American sacred sites and traditional resources of any ethnic community that are important for maintaining the cultural traditions of any group. "Historical resources" is a term with defined statutory meaning and includes any prehistoric or historic archaeological site, district, built environment resource, or traditional cultural resource recognized as historically or culturally significant (Pub. Resources Code, § 21084.1; Cal. Code Regs., tit. 14, § 15064.5, subd.(a)). Paleontological resources, including mineralized, partially mineralized, or un-mineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains, are more than 5,000 years old and occur mainly in Pleistocene or older sedimentary rock units.

California was occupied by different prehistoric cultures dating to at least 12,000 years ago. As far as they can be traced in the archeological record, main trends in California's aboriginal history during the 9000 – 2000 B.C. period involved expanding utilization of rich and varied native food resources, technological improvement and elaboration, overall growth in population, enlargement and increased stability of individual communities, and as time passed, gradual emergence of regional cultures. In 1916, there was considerable agreement that 2000 B.C. was probably the beginning date for the prehistoric Indian occupation of Northern California. It has been assumed that there were no large-scale climatic disruptions after 2000 B.C., and that the chief reasons for cultural variance in several regions were based upon the necessarily differing cultural adaptations to locally available resources such as acorns and salmon, permanently occupied settlements, and expansion of regional populations and trade networks, as well as development of social stratification and craft specialization.

At the time of European contact, California was home of approximately 310,000 indigenous people with complex cultures distinguished by linguistic affiliation and territorial boundaries (Smithsonian Institution, 1978). In general, these mainly sedentary, complex hunter-gatherer groups shared similar subsistence practices (hunting, fishing, and collecting plant foods),

settlement patterns, technology, material culture, social organization, and religious beliefs. They situated permanent villages along the coast, interior waterways, and near lakes and wetlands. Population density among these groups varied, depending mainly on availability and dependability of local resources, with the highest density of people occurring in the Santa Barbara Channel area and the least in the state's desert region.

The effect of Spanish settlement and establishment of missions in California marks the beginning of a devastating disruption of native culture, with forced population movements, loss of land and territory (including traditional hunting and gathering locales), enslavement, and decline in population numbers from disease, malnutrition, starvation, and violence. California's native population was reduced to about 100,000 people by 1850; by 1900, there were only 20,000--less than seven percent of the pre-contact number (Smithsonian Institution, 1978). Existing reservations were created in California by the federal government beginning in 1858 but they encompass only a fraction of native lands. Many California groups continue to await federal tribal status recognition.

In 1848, shortly after California became a territory of the United States, gold was discovered at Sutter's Mill. The resulting Gold Rush era influenced the history of the state and the nation. Thousands of people flocked to gold fields along the Sierra foothills and in 1850 California became the 31st state. After completion of the transcontinental railroad in 1869, settlers and immigrants continued to pour into the state. Settlement of the American West was also encouraged by passage of the Swampland Acts of the mid 1800s-early 1900s and the Homestead Act of 1862, among others. The multi-ethnic character of the state today is a result of the Gold Rush as well as later waves of migration. Buildings and structures in today's urban cores, rural landscapes, coastlines, deserts, forests, and parks, as well as historic archaeological sites, reflect the importance of mining, growth of agriculture, ranching and transportation networks, and economic development of industries based on the state's wealth of natural resources, including lumber, minerals, fish, and petroleum deposits. These contributed to the state's economy and its continuing growth and development. Architectural resources also reflect development in California in the mid- to late-1900s of the defense, aerospace, communication, and tourism industries.

Significant vertebrate or invertebrate fossils or unique geologic units have been documented throughout the state and are likely present in many out-of-state areas. Because the majority of California was underwater until the Tertiary Period, marine fossils older than 65 million years are not common and are exposed mainly in the mountains along the border with Nevada, the Klamath Mountains, Jurassic shale, sandstone and limestone along the edges of the Central Valley, and portions of the Coast and Transverse Ranges, and the Peninsular Ranges. Because of changes in sea level and increases in tectonic activity during the Tertiary, marine as well as terrestrial fossils may be found scattered about the state, particularly along the coast, edges of the Central Valley, northeastern plateau, and southeastern deserts. Tertiary marine fossils have been found under the streets of Los Angeles during storm drain and subway construction. Dating between 1.8 million and 11,000 years ago, Pleistocene continental sedimentary rock units are found throughout the state and have yielded a variety of plant and vertebrate fossils. Pleistocene fossil localities include large lake deposits, such as Lake Manix in the Mojave Desert, marine terrace deposits along the coast, particularly the southern coast, and the La Brea Tar Pits, a well-known site in Los Angeles that has produced a variety of extinct

terrestrial fauna dating to the last Ice Age. Extinct Pleistocene fossils, including mammoths, have also been found during development projects near Sacramento, in Livermore, in southern California, and on the Channel Islands. Holocene-age deposits (less than 11,000 years old), such as those that blanket the majority of the Central Valley floor, are geologically immature and generally unlikely to contain fossils. One exception is the Lake Cahuilla deposits in today's Colorado Desert that have yielded freshwater fossils and small terrestrial vertebrates that date between 270 and at least 6,000 years ago.

8.2. ENVIRONMENTAL ANALYSIS

8.2.1. Approach and Methods

The following evaluation of cultural resource impacts was prepared considering applicable regulations and guidelines, and typical construction activities attributable to compliance with the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations. Additional consideration was given to potential direct impact mechanisms for disturbing, materially altering, or demolishing cultural resources, including buried human remains, because of upgrading existing or construction of new operations and related ground-disturbing activities.

This analysis of potential significant impacts to cultural resources takes into consideration the questions and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order, and a summary of possible impacts from development of new composting operations, unrelated to the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will examine these individual projects to determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific studies that could include further modeling or analysis of these particular cultural resource impacts on a project-by-project basis.

8.2.2. Thresholds of Significance

An impact related to cultural resources is considered significant if it would result in any of the following issues adapted from Appendix G of the CEQA Guidelines:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines section 15064.5;

- Directly or indirectly destroy a unique paleontological resource or site; or unique geologic feature;
- Disturb any human remains, including those interred outside of formal cemeteries.

CEQA Guidelines section 15064.5 provides that, in general, a resource not listed on state or local registers of historical resources shall be considered by the lead agency to be historically significant if the resource meets criteria for listing on the California Register of Historical Resources. CEQA Guidelines section 15064.5 also provides standards for determining what constitutes a "substantial adverse change" that must be considered a significant impact on archaeological or historical resources. For example, a "substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." (CEQA Guidelines, § 15064.5, subd. (b)(1).).

8.2.3. Impacts and Mitigation Measures

Impact 8.1. Compliance with the General Order at composting operations may have the potential to cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5.

Implementation of responses attributable to the General Order may have the potential to pose a significant impact to cultural resources. Compliance responses could include land grading to improve existing surfaces or detention ponds, expanding existing pond capacity, constructing new detention ponds, or changing the wastewater handling system. These options have the potential to expand the footprint of an existing or planned composting operation.

Most existing composting operations are on sites that have been subjected to severe disturbance including grading, trenching, paving, and construction of roads and structures. Nonetheless, activities that require additional disturbance of soil, such as construction of ponds and buildings, trenching for drainage or utility lines, or grading may have the potential to adversely affect cultural resources that might exist in those areas.

Construction and operational disturbances to develop new composting operations (summarized in Appendix E from actual projects that are incorporated by reference) have the potential to encounter and impact cultural resources. Additional construction activities at composting operations in response to the General Order would not substantially increase these impacts.

Specific details on magnitude and type of impacts cannot be determined and would be dependent upon the amount of area disturbed and cultural sensitivity of the individual site. The types of cultural resources that may potentially be affected by construction activities might include, but are not limited to, prehistoric and historical archaeological sites, paleontological resources, historic buildings, structures, human remains, or archaeological sites. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, could also be impacted.

Construction activities that disturb undeveloped areas may pose a potentially significant impact to cultural resources. This impact could be reduced to a less than significant level by mitigation at the local level, beyond the authority of the State Water Board.

Mitigation Measure 8.1. Examples of recognized and accepted measures that are routinely required by regulatory agencies include :

- Perform a cultural resources site survey by a qualified archaeologist or cultural specialist that conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in 36 Code of Federal Regulations, section 61;
- Contact the State Historic Preservation Officer and federal lead agencies as appropriate for coordination of Nation-to-Nation consultations with the Native American Tribes.
- Consult a qualified paleontological resources specialist to determine whether paleontological resources would likely be disturbed in a project area on the basis of the sedimentary context of the area and a records search for past paleontological finds in the area. The assessment may suggest areas of high or known potential for containing resources. If the assessment is inconclusive, a surface survey is recommended to determine the fossil potential and extent of the pertinent sedimentary units within the project site. If the site contains areas of high potential for significant paleontological resources and avoidance is not possible, prepare a paleontological resources management and mitigation plan;
- Consult established archaeological and historical records and conduct a field survey of the project site prior to construction. Survey records shall be filed with appropriate archaeological or historical data centers;
- Consult with local Native American representatives as appropriate to obtain local knowledge of the project vicinity;
- Prepare site development and grading plans that avoid disturbance of known cultural sites and/or documented sensitive areas. Project plans shall include appropriate measures to protect sensitive resources;
- Retain a qualified archaeologist or Native American representative to monitor site development activities, particularly grading and trenching. If artifacts are observed during construction, require that construction be halted until a qualified archaeologist has been consulted;
- Alert onsite workers to the possibility of encountering human remains during construction activities, and prepare appropriate procedures. It is usually required that all construction activities near the location of identified human skeletal remains are halted until proper consultation and mitigation is arranged.

The State Water Board does not have the authority to approve modifications to existing or new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts to cultural resources resulting from site disturbance such as grading and trenching may be unavoidable.

Impact 8.2. Compliance with the General Order at composting operations may have the potential to cause a substantial adverse change in the significance of archaeological resource pursuant to § 15064.5.

For the reasons stated in Impact 8.1, this impact may have the potential to be significant .

Mitigation Measure 8.2. See Mitigation Measure 8.1.

Impact 8.3. Compliance with the General Order at composting operations may have the potential to directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature.

For the reasons stated in Impact 8.1, this impact may have the potential to be significant.

Mitigation Measure 8.3. See Mitigation Measure 8.1.

Impact 8.4. Compliance with the General Order at composting operations may have the
For the reasons stated in Impact 8.1, this impact may have the potential to be significant.

Mitigation Measure 8.4. See Mitigation Measure 8.1.

Impact 8.5. Development of new composting operations, unrelated to the General Order, may have the potential to cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines section 15064.5; cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines section 15064.5; directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or disturb any human remains, including those interred outside of formal cemeteries.

The types of cultural resources that may potentially be impacted through the construction of new composting operations, unrelated to the General Order, might include, but are not limited to, prehistoric and historical archaeological sites, paleontological resources, historic buildings, structures, or archaeological sites. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, could also be impacted.

New composting operations may be constructed anywhere in the state, consistent with local land use restrictions. The State Water Board cannot speculate on how many or where new composting operations will be constructed. It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific cultural resource impacts can be fully analyzed and project-specific mitigation measures can be properly identified.

New composting operations would be subject to severe construction disturbances as discussed briefly in Impact 8.1 that are unrelated to the General Order. Generally, construction activities related to development of new composting operations, especially new large-scale commercial

facilities may consist of construction of large composting operations pads, access roads, or buildings.

Construction of a new composting operation is likely to require substantially more disturbance of undeveloped areas, compared to construction activities related to the General Order. The impacts of such disturbance may be similar to those described in Impact 8.1. Therefore, impacts to cultural resources by the development of new composting operations, unrelated to the General Order, may be significant.

Mitigation Measure 8.5. *Recognized practices routinely required to avoid and/or minimize impacts to cultural resources have been discussed in Mitigation Measure 8.1.*

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts to cultural resources resulting from new composting operations, unrelated to the general order, may be unavoidable.

9. GEOLOGY, SOILS, AND MINERAL RESOURCES

This chapter describes existing geology, soils, and mineral resources in California and analyzes potential impacts that may occur from compliance with the General Order. References consulted for this chapter are provided in Chapter 21.

9.1. ENVIRONMENTAL SETTING

California's geologic and geomorphic features are the result of natural forces that produce, shape, and alter rocks. Massive rocks form the foundation of mountains while smaller rock fragments fill streams and valleys, and tiny rock fragments form the sandy boundaries between continent and coast.

Physiography

California's geomorphology is a product of more than 500 million years of tectonic plate convergence and subduction, collision, and expansion that built mountain ranges, valleys, and high plains. Plate tectonics is a complex process that involves the movement and interaction of lithospheric plates that form the earth's crust. Driven by forces within the earth's mantle, these plates continually move; one may pass another at transform boundaries such as the San Andreas Fault, converge at subduction zones where one plate dives beneath another, or simply collide to form steep folded mountains.

The San Andreas Fault zone is an active transform boundary where the Pacific plate is rotating north-northwest with respect to the relatively stable North American Plate. All of California that is east of the San Andreas Fault is situated on the western edge of the North American Plate; the portion of the state that is west of the San Andreas Fault is situated on the Pacific Plate. Although movement along the San Andreas Fault is right lateral strike slip (one side of the fault moves right with respect to the other), the fault has also produced compressional geomorphic features such as the Transverse Ranges at fault bends and at its northern termination at the Gorda Plate. Additionally, the fault has produced divergent geomorphic features such as the Salton Sea and the Sea of Cortez near its southern end.

Tectonic movement generally occurs at a geologic pace, so that the interval between seismic events at a particular location may be on the order of decades, centuries, or millennia. These plate tectonic motions are important on a human scale because each incremental movement results in an earthquake that may impact human activities. On a larger scale, tectonic movements have resulted in extrusive volcanic activity, intrusive plutonic emplacement, and accretion of additional crust. Eons of tectonic uplift and down-warping combined with erosive forces have produced geomorphic features such as mountains, canyons, and valleys that are part of the current landscape. Geomorphic landforms are typically geologically young, but the landforms contain rocks and geologic features that range from recent to hundreds of millions of years.

Topography

California's mountains, canyons, foothills, valleys and deserts provide variable and often extreme topographic relief. The highest 100 mountains are higher than 12,000 feet above mean sea level (MSL), and fourteen are higher than 14,000 feet. In contrast, elevations of California's

broad valleys, desert lowlands, deltaic regions, and coastal plains tend to be less than 100 feet above MSL. The extreme topographic variability of the state is best illustrated by the juxtaposition of the highest and lowest points in California: Mt. Whitney's peak is 14,494 feet above MSL, while a mere 85 miles to the southeast, Death Valley is 282 feet below MSL. Between the high mountains and deep valleys are gentle foothills and rolling hills, volcanic plateaus, and desert plains; statewide, the average elevation is 3000 feet above MSL.

Soil Development

Soil in California is as diverse as the geologic and ecological factors that determine its properties. Soil forms over time as a by-product of chemical or mechanical weathering of rocks, dust, and organic debris. The rate at which soil forms depends on factors such as precipitation, temperature, parent material, and nutrient input.

Soil is an important resource in California; agricultural, forest, and recreational economies rely on soil resources. The Natural Resources Conservation Service (NRCS) has classified and named all of the various soils in the United States and has developed an on-line database, http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm, that includes information about soil types and characteristics such as color, texture, mineralogy, and organic content. The soil survey database includes soil engineering properties such as water retention potential, cation exchange capacity, erosion potential, shrink-swell potential, and corrosion potential.

Soil erosion is a natural process that is often exacerbated by human activities such as cultivation, grazing, timber harvesting, grading and construction, and other land disturbances. Soil erosion is most often initiated by water, but may also be generated by wind or gravitational forces. Soils that are most susceptible to erosion are generally high in silt content, but may also be composed of fine sand or well-graded coarse sand. Expansive clay soil may have shrink/swell properties that promote erosion on shallow slopes as well as steep slopes.

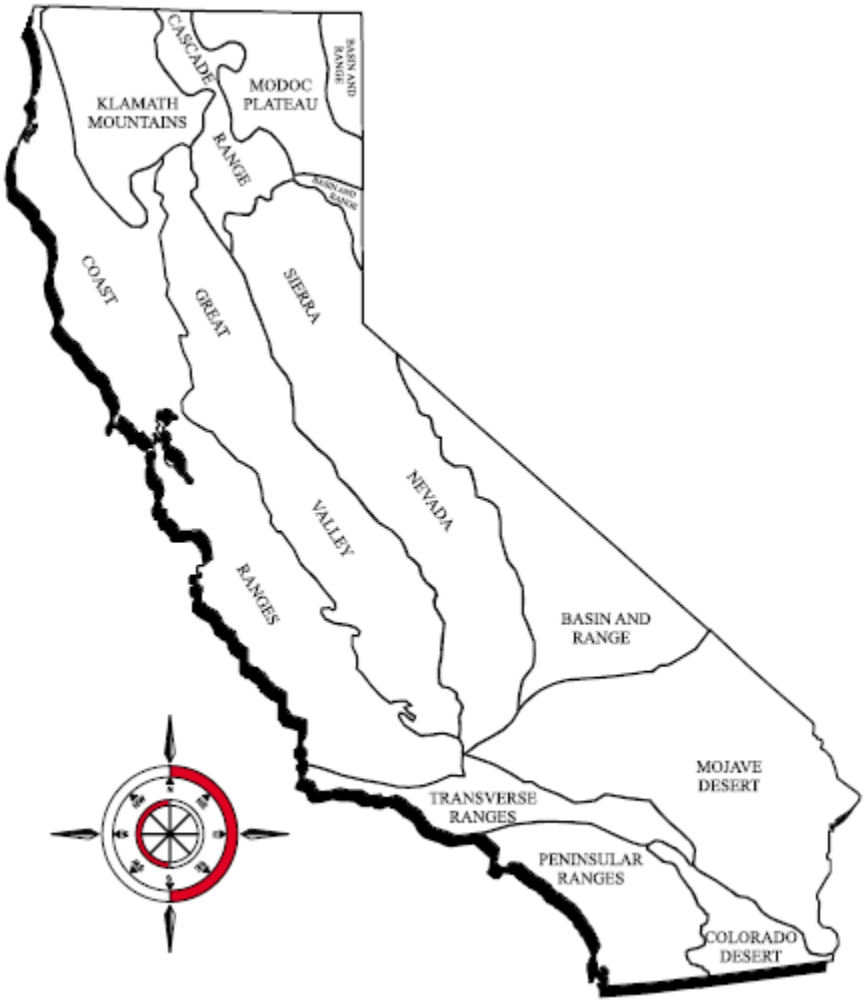
Soil in the Great Valley is derived from eroded sediments that originated from the Sierra Nevada Mountains to the west and from the Coast Ranges to the west. Several millennia of episodic flooding have resulted in more than 10,000 feet of soil accumulation in the Great Valley. The Valley's rich and fertile topsoil is the foundation of California's agricultural economy. However, agricultural production practices and development have resulted in removal or destruction of fertile topsoil over vast areas.

Geomorphic Provinces

The wide physiographic variability across relatively short distances in California is the result of it varied geology, topography and climate. These natural physiographic characteristics form the basis of California's eleven regional geomorphic provinces. Each geomorphic province is defined by its geology, topography, landforms, and mineralogy. In turn, the geomorphic characteristics of each province influence its climate and precipitation, vegetation, and watersheds. A common attribute of the geomorphic provinces is that physiographic characteristics have their origin in complex tectonic interactions, and are altered by other natural forces. With few exceptions, boundaries of geomorphic provinces generally follow the delineation of California's ecological subregions (USGS, 1996).

Although geomorphic provinces are generally defined by unique landforms and geological features, some linear features such as river systems and earthquake faults may cross

designated geomorphic boundaries, while exhibiting the unique physiographic characteristics of each province (Harden, 1998). For example, the San Joaquin River exhibits high mountain stream characteristics near its source in the Sierra Nevada, but the river channel appears broad and sinuous as it flows across the Great Valley and into the delta region. The geomorphic provinces described below are generally arranged in reading order, from west to east and north to south.



Source: California Department of Conservation, California Geological Survey Note 36, 2002

Figure 9-1 Geomorphic Provinces of California

Coast Ranges - The Coast Range province is situated along the western edge of the state and extends approximately 600 miles from the Oregon Border in the north to Santa Barbara County in the south. The province consists of northwest-trending mountain ranges separated by broad, elongated river valleys that are generally oriented parallel to the San Andreas Fault and other regional faults.

The Coast Ranges are divided in two sub-provinces that represent different tectonic histories; mountains north of San Francisco Bay are composed primarily of Franciscan Formation rocks and mountains south of the Bay consist primarily of Salinian Block. The Franciscan Formation is a complex mélange of metasedimentary and metavolcanic rocks, sandstones, and turbidites containing greenstone, blueschist, eclogite, and chert. The Salinian Block is primarily composed of granitic rocks overlain by roof pendants composed of schist, gneiss, marble, other high-grade metamorphic rocks, and colluvial and alluvial sedimentary rocks. Coast Range rocks and sediment in adjacent valleys and lowlands are covered by unconsolidated alluvial fan and fluvial sediments.

Klamath Mountains - The Klamath Mountains geomorphic province is located in the far northwest corner of the state and into the southwest corner of Oregon. The steep and rugged topography of the Klamath Mountains is the result of tectonic uplift and intrusion, precipitation, and irregular drainage courses. Mountain ranges within the provinces are incised by deep river canyons with uplifted gold-bearing terraces between the rivers and sides of the canyons. Six major rivers and tributaries wind through the province; including the Klamath, Trinity, Smith, Scott, and the Salmon.

The Klamath Mountains province is considered to be a northern geologic extension of the Sierra Nevada because its lithology includes intrusive Mesozoic granitic rocks, and folded Paleozoic metamorphic roof pendant rocks and serpentinite that are similar in age and composition. The Klamath province is second only to the Sierra Nevada in placer and lode gold production.

Cascade Range - The Cascade Range consists of a chain of dormant and active volcanoes that extend southward from British Columbia, Washington and Oregon and into northern California. In California, the range is dominated by Mt. Shasta, a glaciated stratovolcano that rises 14,162 feet above MSL, and by Mt. Lassen, a 10,462-foot high plug-dome volcano most recently erupted from 1914 to 1921. Other volcanic features include active geysers, fumaroles, and boiling springs, dormant cinder cones, and basaltic flows.

The Pit River is an example of a landform that exhibits the physiographic features of each geographic province that it crosses. The Pit River watershed includes several tributaries, and extends across both the Modoc Plateau and the Cascade Range. The Pit River traverses seven dams as it flows from its origin in the Warner Mountains, across the Modoc Plateau, through the Cascade Range province between Mt. Shasta and Mt. Lassen, and into the eastern arm of Lake Shasta.

Most of the mineral resources in the Cascade Range are related to volcanic alteration such as sulfide minerals, limonite, siliceous sinter, and perlite. Sedimentary-derived minerals include lacustrine and alluvial aggregate products, and gold-bearing stream deposits.

Modoc Plateau - The Modoc Plateau is situated east of the Cascade Range province and just west of the northernmost portion of the Basin and Range. The Plateau is composed of interlayered lava flows, ash beds, and cinder cones that are a southern extension of the basaltic plateaus of eastern Oregon and Washington.

Although elevations within the Modoc Plateau range from 4,000 - 6,000 feet above MSL, the province appears relatively flat compared to the Cascade Range to the west and the northern extent of the Sierra Nevada to the south. The shallow soil profile and water table across most of

the Modoc Plateau have produced surface water features such as meandering streams, shallow lakes and marshes.

The primary mineral resources in Modoc Plateau are gold, mercury, copper, and silver associated with hydrothermal alteration. Lacustrine deposits in the Modoc Plateau produced the only economic source for peat in California (Clinkenbeard and Smith, 2012).

Basin and Range - California's Basin and Range province is the westernmost part of the Great Basin that covers large portions of Nevada, Utah, and Arizona. Three discrete sections comprise the Basin and Ranges province in California: 1) the far northeast corner of the state, 2) a small area just north of the Tahoe region, and 3) a large section south of Tahoe that extends to the Mojave Desert province.

The province is characterized by north-trending, uplifted ranges and broad, down-dropped valleys known as "horst and graben" structures. In the northern Basin and Range, the Warner Mountains have been uplifted above the adjacent Surprise Valley. Further south, Owens Valley lies between Sierra Nevada escarpment to the east and the White Mountains to the west. A more famous example of a horst and graben is Death Valley that is flanked by the nearby Panamint Range and Amargosa Range.

Precipitation tends to be captured on the Warner Mountains and the Sierra Nevada Range, creating a "rain shadow effect" that reduces the rainfall available to the Basin and Range province. The resulting lack of precipitation combined with interior drainage has resulted in a desert environment; the primary groundwater recharge is run-off from adjacent mountain ranges and snow in the high desert regions.

Mineral production in the Basin Range primarily consists of sedimentary products such as evaporite minerals, borate minerals, clay, aggregate products, dimension stone, and alluvial gold deposits.

Great Valley - The Great Valley province is an elongated tectonic depression approximately 430 miles long and 75 miles wide that lies between the Coast Ranges and the Sierra Nevada. Generally, valley elevations range from near sea level to about 100 feet above MSL. The lowest elevations in the province are just east of San Francisco Bay where the elevation dips just slightly below MSL. The highest elevations and at the northern and southern ends of the valley where the elevation reaches about 400 feet above MSL and at the Sutter Buttes, a solitary volcanic region with elevations up to 2100 feet above MSL.

The Great Valley basement structure consists of an ancestral thrust and fold belt composed of metamorphic marine sedimentary rocks. Core samples through the Valley sediment reveal a history of intermittent deposition and changing environments. Paleozoic marine layers were folded into synclinal basins that collected and trapped organic detritus from the shallow oceanic waters. Sediment derived from uplift and erosion of the adjacent Sierra Nevada and the Coast Ranges covered the organic layers, filling the valley with alluvial and fluvial sediment, channel deposits, and glacial outwash. Over time, these organic layers eventually decayed and are now mined as oil and gas deposits.

The Sacramento and the San Joaquin Rivers are the primary river systems in the Great Valley. The Sacramento River flows south from its headwaters north of Lake Shasta and the San Joaquin flows north and west from its origin in the Sierra Nevada. The two rivers meet just east

of San Francisco Bay; the confluence of sediment-laden waters contributes to the Sacramento-San Joaquin Delta system of islands, channels, and sloughs. Eons of seasonal flooding and deposition of nutrient-rich sediment from Great Valley river systems has produced rich and fertile soil that is the source of the state's agricultural economy

The Great Valley is an important source of natural gas and oil reserves. Most of the natural gas production comes from the Great Valley sequence of layered and folded marine sedimentary rocks in the central valley region, whereas most of the oil production is in Kern County in the southern portion of the valley. Hydrocarbon fluids and gases were formed by decomposition of marine plants and organisms in fine-grained soil or mud. The petroleum compounds were trapped by continued deposition, and by faulting and uplift of the adjacent Coast Ranges and Sierra Nevada mountains.

Non-fuel mineral occurrence in the Great Valley is principally the result of sedimentary deposition of erosional debris from the adjacent Coast Ranges and Sierra Nevada. Consequently, mineral resources generally include depositional products such as construction aggregates (sand and gravel), clay, and gypsum.

Sierra Nevada - The Sierra Nevada province is a 400-mile long tilted and uplifted tectonic block composed of granitic, metamorphic, and volcanic mountains. The Sierra Nevada has an asymmetrical structure; the steep eastern face looms high above down-warped desert basins to the east, and the western slope appears relatively gentle with an overall slope gradient of about 4 degrees between the Great Valley and the Sierra crest.

The primary structure of the Sierra Nevada is an intrusive granitic mass called the Sierra Nevada batholith. The granitic batholith formed beneath and intruded into existing Paleozoic-age marine sedimentary layers, so that the younger granitic mountains are capped by older metamorphic rocks known as roof pendants. More recent volcanic activity added pyroclastic debris, lava flows and ash deposits to the Sierra Nevada landscape. Glaciation and precipitation carved the landscape further, cutting deep river canyons into the western slope and creating such features as Yosemite Valley.

The primary mineral resources in the Sierra Nevada are gold and aggregate products. Gold is mined in the western foothills of the Sierra Nevada. The Mother Lode follows the general trend of gold-bearing metamorphic rocks in the Melones Fault zone. West of the Melones, placer gold is typically found in modern river sediment and in ancient river deposits. Extraction of aggregate sources includes blasting and crushing metamorphic bedrock, excavating modern streams and river channels, and excavating land-based ancient channel and alluvial deposits. The high rate of erosion in the Sierra Nevada continues to replace aggregate materials in modern river systems.

Transverse Ranges - The Transverse Ranges are an east-west trending series of steep mountain ranges and basins situated just south of the north-south trending Coast Range and Great Valley, west of the Mojave Desert, and north of the north-south trending Peninsular Ranges.

As the name implies, the Transverse Ranges represent a transition in tectonic regimes. The shift from north-south to east-west topography follows an eastward bend in the San Andreas Fault. The province is being compressed by north-south forces and uplifted by nearby thrust

faults in response to lateral movement on the San Andreas Fault. The result is a complex sequence of Precambrian metamorphic rocks, Mesozoic granitic rocks, and thick sequences of Cenozoic sedimentary and volcanic deposits.

The Transverse Ranges are important sources of oil and gas production, and construction products such as crushed stone, sand and gravel, clay, and diatomite. The continuous folding and reverse faulting trapped thick sequences of petroleum-saturated sedimentary layers; these reservoir deposits are some of the state's most productive oil reserves.

Peninsular Ranges - The Peninsular Ranges are situated at the southwestern corner of the state and extend south another 700 miles into Baja California. The province is bounded on the north by the Transverse Ranges, on the east by the Colorado Desert, and on the west by the Pacific coast.

Although mountains and other topographic features trend north-northwest similar to the Coast Ranges, the Peninsular Ranges more closely resemble the Sierra Nevada in both structure and composition. The granitic intrusive rocks that make up the Peninsular batholith are similar in age and structure. Like the Sierra Nevada, the landform is asymmetrical with a steep escarpment on the east and gentle slope on the west. Like the Sierra Nevada, the Peninsular batholith intruded into older sediment; the sediment included rocks of Mesozoic-age as well as Paleozoic-age rocks. The Peninsular Ranges province is situated west of the San Andreas Fault on the active Pacific Plate, indicating an origin far south of its current location

Like the Klamath Mountains and the Sierra Nevada Range, the Peninsular Ranges contain numerous gold deposits; however, the occurrence is primarily in quartz veins and metamorphic contact zones that require hard rock extraction methods. The Peninsular Ranges are an important source of lithium minerals and gemstones that are typically found in conjunction with coarse-grained granitic rocks.

Mojave Desert - The Mojave Desert is located in the southeast portion of the state, south of the Sierra Nevada Ranges and the Basin and Ranges, and east of the Transverse Ranges. The province is bounded by two transform fault structures, the San Andreas Fault on the west and the Garlock Fault on the north, and on the east by the Colorado River.

The various geomorphic landforms within the province include high desert plains and alluvial fans and broad basins. The lack of geomorphic orientation is likely the result of tectonic shear influences from adjacent provinces and faults. Lateral movement on the Garlock Fault and the San Andreas Fault zones have produced extensional features such as normal faults, mountains and valleys, and compressional features such as thrust faults and uplifted blocks. In addition to the boundary faults, several active north-south trending faults transect the northwestern portion of the province near the intersection of the Garlock and the San Andreas faults.

The primary source of groundwater recharge is surface run-off from the higher mountain ranges, and percolation through alluvial fans and lowland sediment. However, much of the moisture is lost to evaporation.

Mineral extraction is a major industry in the province. In addition to construction aggregate production, the Mojave Desert is an important source of borax, gold, silver, iron, gypsum, bentonite and zeolites, and several industrial-grade rare earth minerals.

Colorado Desert - The Colorado Desert is a desert-lowland situated at the southern border of California, between the topographically higher Peninsular Ranges on the west and southern Mojave Desert on the east. The Colorado Desert is a northern extension of the Sonoran Desert ecological subregion that covers most of northern Mexico and Arizona.

The primary geomorphic feature of the province is the Salton Trough, a down-dropped tectonic block as low as 250 feet below MSL that contains the Salton Sea. The Salton Sea is a man-made feature that holds water diverted from the Colorado River. The basin is the result of changing tectonic regimes related to the San Andreas Fault system. The San Andreas acts as a transform boundary (the Pacific Plate is moving north with respect to the North American Plate) on the northern part of the province, and as a divergent boundary (the Pacific Plate is moving away from the North American plate) to the south. The result of the combined transform and divergent movement is that the Salton Trough has subsided nearly 250 feet below MSL.

The province's mineral production is typical for a desert environment. Primary minerals include evaporite minerals, such as gypsum, as well as aggregate sand and gravel.

Geologic Hazards

For this project, the term geologic hazard is broadly defined as the geologic manifestation of an actual or threatened natural or unnatural movement of land, earth, or water. Baseline geologic hazards considered for the project include seismic rupture, seismic shaking hazards (liquefaction, landslides, tsunamis, and lateral spreading), land subsidence, volcanic eruption, expansive soil, corrosive/reactive soil, and hazardous minerals.

The potential severity of a geologic hazard at a particular location may be related to the regional geology, topography, soil conditions, climate, or hydrogeologic conditions. The potential impact of a particular geologic or soil condition depends on factors such as human occupancy or presence and structural or non-structural characteristics. This environmental analysis is intended to provide an overview of potential impacts from known geologic conditions throughout the project area. However, local hazards would have to be considered with respect to site-specific conditions or activities, and would be evaluated on a case-by-case basis.

Seismic Hazards - In California, earthquakes are the primary geologic hazard with the potential to impact great numbers of people. The primary earthquake hazards are associated with ground rupture; secondary hazards include landslides, liquefaction, tsunamis/flooding, and lateral spreading. Seismic hazards and seismic risk varies considerably across the state and even within each fault system.

Faults in California move in three basic ways: lateral, upward, and downward. A strike-slip fault is nearly vertical and perpendicular to the ground surface; the movement is lateral, where one side moves left or right relative to the other. The lateral ground shift may off-set or truncate linear geomorphic features such as streams and ridges. A reverse or thrust fault pushes one side upward at an angle and over the other; over time this compressional movement tends to create hills and mountains. A normal fault moves downward at an angle, pulling away from the other side; the extensional movement creates basins.

The most well-known fault system in California is the San Andreas, a segmented, right-lateral transverse fault that generally trends northwest to southeast across the western edge of the state from Point Arena to Baja California. The northern segment crosses the Coast Ranges

diagonally from Point Arena to the Santa Cruz Mountains; the Central segment runs along the west side of the Great Valley from Hollister to Parkfield. Except for an eastward bend at the Transverse Ranges, the southern segment extends south from Parkfield to the Sea of Cortez. The northern portion offset more than 20 feet of ground surface in the destructive 1906 San Francisco earthquake, the central segment produces periodic relatively low magnitude (Mw 6 and under) earthquakes and aseismic creep, and the southern segment produced a magnitude 8.2 earthquake in 1857.

Lateral movement on the San Andreas Fault zone and other major lateral faults has resulted in development of thrust faults and normal faults to accommodate the lateral movement. The 1989 Loma Prieta earthquake and the 1994 Northridge earthquakes were the result of movement on thrust faults associated with the San Andreas Fault zone.

Although earthquake hazards are greatest in the seismically active western portion of the state, faults in other portions of the state may also present seismic risks. Seismic hazards in the central and eastern part of the state tend to be distributed over a region or an area rather than a single fault. An areal source zone is one where the seismic activity and frequency is such that past seismic activity cannot be not clearly assigned to a particular fault. The Foothills, Western Nevada, Mohawk-Honey Lake, Northeastern California, and Brawley seismic zones are areal source zones. Earthquakes in these areal source zones typically produce magnitudes less than 5, the 1975 Cleveland Hills earthquake in the Foothills fault system was 5.8 and resulted in significant local damage, and the 1966 Dog Valley earthquake had a magnitude of 6.2.

Landslides / Slope Failures - Slope failures include the downslope displacement and movement of soil, rock, or other materials. Slope failures may be triggered by static gravitational forces, dynamic seismic forces, or human activities. Even minor cracking and slumps can damage property; larger failures, such as landslides, may result in catastrophic injuries and property damage.

Slope stability depends on a number of interdependent variables including geology, climate, topography, slope geometry, and saturation. Factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope. Although earthquakes often cause landslides, most landslides are triggered by non-seismic forces. A primary component of slope failures is water, including precipitation, drainage, or seepage from impoundment structures.

Mudslides – Mudslides also referred to as debris avalanches or debris flows, are a type of landslide that involves saturated soil. Mudslides are most often the result of prolonged heavy rains, loose soil conditions, and slopes; however, other conditions that may trigger mudslides or flows include leaking pipes or reservoirs, or drainage diversions. The hazard is increased with the slope gradient, but may also occur on slopes as shallow as 15 degrees.

Tsunami - Tsunamis are generated by ground motions beneath large bodies of water as a result of an earthquake or other geologic event such as an undersea volcano or oceanic meteorite impact. Energy emitted by undersea ground motions is translated to water in the form of powerful undersea waves. Tsunami waves travel away from the source until they encounter a body of land large enough to stop them. Several historic earthquakes, including the 1946 M8.1 Aleutian, 1960 M9.5 Chile, and 1964 M9.2 Alaska earthquakes resulted in tsunamis that inundated and caused considerable damage to portions of the northern and central California

coast. A tsunami generated by a large earthquake in Alaska or Chile has the potential to cause catastrophic damage to California's coastal regions.

Tsunamis may also be generated in large inland bodies of water. Tsunami effects identified near the shores of Lake Tahoe have been linked to historic and prehistoric earthquakes and subsurface landslides.

Seiche - Seiches are a type of water motion generated as a response to external forces such as seismic shaking, landslides, strong winds, or rapid atmospheric changes. Seiche motion tends to occurs as an oscillating standing wave. Generally, seiche waves occur in rivers, reservoirs, ponds and lakes, but also may occur in partially or fully enclosed water bodies along the coast. Seiche waves resulting from the 1964 Alaska earthquake were observed in disparate localities such as New Mexico, Kansas, Lake Michigan, the Gulf Coast, and Australia. Seiches resulting from strong winds are common in large lakes and bays.

Land Subsidence - Land subsidence is the loss of surface elevation due to removal of subsurface support. Subsidence time is often the result of subsurface extraction of substances such as liquids, gas, or minerals, and may also be initiated by seismic ground motions.

Subsidence as a result of groundwater removal in excess of groundwater recharge is generally spread across broad areas. Extensive agricultural pumping has resulted in soil compaction and lowered ground surfaces in the San Joaquin Valley and the Imperial Valley.

Subsidence from extraction of liquids and gas is typically incremental over extended periods of time and the damaged is observed in off-set structures, roads, or other features. Earthquake ground shaking may amplify the effects of extraction activities or other subsurface disturbances, resulting in sudden subsidence.

Volcanic Eruption - Although rare, volcanic eruptions will occur in California at some time in the near or distant future. The greatest hazards in California are from magma eruptions in the Cascade Range or within the Long Valley caldera in the Basin and Range and eastern Sierra Nevada. The United States Geological Survey monitors active volcanoes including those in California for evidence of subsurface movement, and maintains a database of show areas likely to be impacted by volcanic eruptions (White, et al 2011). Additionally, volcanic eruptions from sources in Oregon or Nevada may temporarily impact air and water quality in northern California

Expansive Soil - Expansive soils contain clay minerals that allow expansion on a molecular level. Expansive clay minerals contain gaps or pockets that enable water to enter and expand the molecule; when the water dries, the molecule shrinks. The continually repeating change in soil volume is called "shrink and swell", where soil expands, swells, and heaves when moist, then shrinks and cracks as it dries. In the United States, the annual damage from expansive soils is greater than the damage from floods, hurricanes, tornadoes, and earthquakes combined.

Corrosive or Reactive Soil - Soil corrosion involves a chemical reaction between soil and other elements such as steel and concrete. Typically, soil exposed to high moisture for long periods and containing high electrical conductivity potential, high acidity or high alkalinity and/or high sulfide content will exhibit the greatest corrosivity potential.

Hazardous Minerals - Although most mineral resources offer economic benefit to a region, some minerals including some that once were mined as commodities, have been designated as hazardous to human health. The California Geological Survey has identified three classes of naturally occurring minerals that are potentially hazardous to human health: asbestiform minerals (asbestos), mercury, and radon gas.

- Asbestiform minerals are typically associated with serpentinite and ultramafic metamorphic rocks. Asbestiform minerals may be encountered during site grading or excavation, in surface soils, or as rock outcrops.
- Mercury is typically encountered in soil near rivers, lakes and reservoirs, and in overbank deposits. The primary exposure route for mercury is consumption of fish or fish-eating birds and mammals.
- Radon gas forms from decay of uranium and thorium typically found in metamorphic rocks and granitic rocks and in soil derived from those rocks. The primary exposure route for radon is inhalation in a confined or indoor environment.

Mineral Resources

Mineral resources in California consist of oil and gas, as well as deposits of rock, sand, and gravel. The occurrence and type of mineral resources in California is largely based on a combination of regional geologic and tectonic history, and long-term climatic conditions. Each geomorphic province contains a unique suite of mineral resources and aggregate resources.

California is an important producer of on-shore and off-shore oil and natural gas resources. Most of the current natural gas production comes from the Great Valley sequence. Oil resources are primarily extracted from the southern Great Valley and Transverse Ranges provinces.

Non-fuel mineral extraction in California is accomplished by varying methods. Aggregate products are typically excavated from rock quarries, ancient river channels, or coarse fluvial deposits. Metallic ores are typically extracted from hard rock mining or placer mining, often as a by-product of aggregate production.

Most of the economic non-fuel mineral production in California is associated with construction uses. The primary mineral products related to construction use include aggregate sand, gravel, Portland cement, dimension stone, and crushed stone. The California Geological Survey (CGS) reported in March 2013 that at current construction rates, the current supply of aggregate material will not cover California's needs for the next 50 years.

The primary industrial minerals in California are metallic ores and mineral deposits including gold, boron, diatomite, iron ore, lime, magnesium compounds, salt, silver, soda ash, talc, and zeolites (Clinkenbeard and Smith, 2012). Table 9.1 lists some of the economically important minerals that are mined in California.

Table 9-1 Non-Fuel Mineral Resources in California

Non-Metallic Deposits	Metallic Ores and Deposits
Barium-Barite	Arsenic
Boron Quartz	Chromium
Calcium	Copper
Clay	Gold
Dimension Stone	Iron
Feldspar	Lead
Graphite	Manganese
Gypsum – anhydrites	Mercury
Limestone	Nickel
Marble	Platinum
Sand/Gravel	Silver
Silica	Titanium
Soapstone	Tungsten
Sulfur	Uranium
Talc	

Source: Clinkenbeard, J.P., and Smith, J., California Non-Fuel Minerals 2012, Department of Conservation, California Geological Survey.

The CGS Mineral Resources Project maintains a collection of mineral classification maps, technical reports, and data regarding mineral resources throughout the state. The Mineral Land Classification Project has completed 97 classification studies of mineral resources for approximately 35 percent of the state. These technical resources are available to assist lead agencies, planners, and the public in the management, and conservation of California's mineral resources

9.2. ENVIRONMENTAL ANALYSIS

9.2.1. Approach and Methods

The following evaluation of impacts associated with geology, seismicity, soils, and mineral resources was prepared by considering applicable regulations and guidelines, and typical construction activities and operations that would be attributable to compliance with the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential significant impacts to geology, seismicity, soils, and mineral resources takes into consideration the questions in Appendix G of the CEQA Guidelines The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance

with the General Order, and a summary of possible impacts from development of new composting operations, that are unrelated to the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific studies that could include further modeling or analysis of particular geology, seismicity, soils, and mineral resources impacts on a project-by-project basis.

9.2.2. Thresholds of Significance

An impact related to geology, soils, and mineral resources would be considered significant if it would result in any of the following, which are adapted from Appendix G of the CEQA Guidelines:

- Expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death from:
    - 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;
    - Strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction;
    - Landslides.
- Result in substantial soil erosion or loss of topsoil;
- Be located on a geologic unit or soil that is unstable or that would become unstable because of the project and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) that would create substantial risks to life or property;
- Be located on soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water;
- 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;
- 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.

9.2.3. Impacts and Mitigation Measures

Impact 9.1. Compliance with the General Order at composting operations may have the potential to expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death from:

- **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;**
- **Strong seismic ground shaking;**
- **Seismic-related ground failure, including liquefaction; or**
- **Landslides.**

Numerous active faults are known to exist throughout the state that may generate earthquakes capable of injuring people and damaging structures, including those associated with composting operation projects. Ground shaking associated with seismic events may also cause secondary geologic hazards such as liquefaction, subsidence and landslides. These seismic-related effects have the potential to be a significant impact.

Compliance with the General Order requires the discharger to manage wastewater generated by composting operations. Management options to comply with the General Order include but are not limited to: construction of monitoring wells, detention ponds, storage tanks, or wastewater treatment systems that may or may not be already present. Failure or collapse of wastewater detention structures during a strong seismic event may result in localized flooding and/or debris flows with the potential to cause property damage or injury.

However, thousands of structures are currently located within active fault zones in California, including residential properties, commercial and industrial facilities, highways, ponds, and airports. Many of these structures are designed to withstand the effects of seismic events as part of the permitting process. Seismic risk may be reduced through appropriate siting, design and construction practices.

Consequently, impacts relating to seismic shaking or rupture of an earthquake fault, or secondary seismic effects have the potential to be significant.

Mitigation Measure 9.1.

Seismic risk at composting operations may be reduced through implementation of siting, design and construction practices that comply with state and local seismic design regulations. Compliance with construction standards for seismic design is the responsibility of the other state and local authorities.

Examples of recognized and accepted measures that are routinely required by regulatory agencies include:

- Modifications to existing composting operations or construction of new operations, should be sited, designed, and constructed in compliance with state and local seismic design regulations;
- Composting operation modifications should be constructed to withstand the effects of ground shaking, liquefaction, and lateral spreading;

- Retaining structures in particular should be designed and constructed in accordance with state of practice relevant seismic regulations;
- Composting operations should implement an earthquake safety and response program; and
- In the event of a large earthquake event (i.e., magnitude 5.0 or greater within 50 miles of the project site), all project structures and features should be inspected for damage, as soon as possible. Any damaged structures or features should be closed to staff and public until such features or structures have been evaluated and/or repaired.

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that environmental impacts related to seismic risk including surface rupture, landsliding, liquefaction, resulting from site disturbance, grading, trenching may be potentially significant and unavoidable.

Impact 9.2. Compliance with the General Order at composting operations may have the potential to result in substantial soil erosion or loss of topsoil.

Compliance with the General Order may require earthwork and grading to improve existing or construct new pads or monitoring wells, expand existing or construct new detention ponds and wastewater management system. It is also possible that some new improvements may include incidental structures, such as ancillary buildings, covered shelters, or onsite utility lines. Depending on the size and scope of the improvements, heavy equipment required for these improvements may include bulldozers, scrapers, compactors, graders, excavators, loaders, dump-trucks, and water trucks. These activities have the potential to create significant soil disturbance and initiate adverse soil responses such as soil erosion or loss of topsoil. During grading activities to improve undeveloped land, precipitation and runoff may initiate erosion and transport of sediment. If unabated, sediment may be transported onto adjacent properties and into receiving waters.

Controlling soil erosion is a factor in in preventing water pollution, soil loss, wildlife habitat loss and human property loss. In particular, soil erosion and runoff can degrade the quality of surface waters and damage property. Topsoil is an important element in soil erosion control; topsoil often contains seeds of native shrubs and grasses, and nutrients that will promote vegetative growth and aide in erosion control.

Consequently, construction activities that disturb undeveloped areas pose a potentially significant impact to soil erosion potential or loss of topsoil. This impact could be reduced to less than significant by mitigation at the local level, beyond the authority of the State Water Board.

Mitigation Measure 9.2. The following practices can be implemented to avoid and/or minimize potential soil erosion or loss of topsoil resulting from earthwork and grading activities:

- Implement Storm Water Pollution Prevention Plan by a Qualified Storm Water Pollution Plan Developer (QSD);
- Schedule construction work for the dry season;
- Limit development on portions of a site while leaving the remaining land in a natural undisturbed condition;
- Promote natural vegetation by using parking lot islands and other landscaped areas;
- Limit clearing and grading of native vegetation at a site to the minimum amount needed;
- Grade only areas that are going to be immediately worked on. Leave natural vegetation as long as possible;
- Promote use of native vegetation and revegetation: Existing native vegetation requires the least care of any planting materials, requires little or no water or fertilizer, and may grow on difficult sites;
- Implement BMPs such as covering stockpile materials, installation of silt fences or fiber rolls to reduce or eliminate discharge of soil, surface water runoff and pollutants during excavation, grading, trenching, repaving or ground-disturbing activities;
- After a large storm or rainfall event (i.e., ≥ 1" in 24 hours), inspect all project structures and features for damage, as soon as possible after the event. Any damaged structures or features will be closed to staff and the public until evaluated and/or repaired.

The General Order requires control of storm water and liquids generated by the compost process. Composting operations enrolled in the General Order are required to comply with the requirements of the General Order to prevent erosion, which include the following:

- Design, construct, and maintain areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost to control and manage run-on and run-off from a 25-year, 24-hour peak storm event.
- Protect areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost from surface flows associated with a 25-year, 24-hour peak storm event from inundation by surface flow.
- Design and operate the storm water detention pond, containment berm, and drainage conveyance systems to contain a 25-year, 24-hour peak storm event at a minimum.
- Require low permeability drainage ditches for Tier II facilities.

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures other than those included as requirements of the General Order. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses,

for CEQA compliance purposes, that environmental impacts related to soil erosion or loss of topsoil may be potentially significant and unavoidable.

Impact 9.3. Compliance responses to the General Order at composting operations may have the potential to be located on a geologic unit or soil that is unstable or that would become unstable because of the project and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Earthwork for structural improvements such as pads, detention ponds, monitoring wells, or wastewater treatment structures that are constructed to comply with the General Order may have the potential to initiate adverse soil responses such as differential settlement, soil heave, erosion, and slope failures.

Existing and new composting operations may be located in areas underlain by unstable soils. Grading activities including excavation, cutting/filling, and stockpiling could exacerbate existing loose soil conditions, and increase potential for natural geologic hazards such as landsliding, lateral spreading, subsidence, liquefaction or collapse. Site improvements that expand the footprint of an existing or new compost operation would increase the likelihood of exposing adverse soil conditions.

Consequently, construction activities that disturb undeveloped areas have the potential to expose and exacerbate conditions related to an unstable geological unit or weak or sensitive soil. Therefore, it is anticipated that impacts from compliance with the General Order on an unstable geologic unit or soil, may have the potential to be significant.

Mitigation Measure 9.3. The following are recognized practices routinely required to avoid and/or minimize impacts to from unstable soil and adverse soil conditions:

- Preparation of site-specific and geotechnical engineering reports by licensed professionals to identify and evaluate weak and less competent soil conditions and recommend site specific mitigation. The geotechnical professional recommendations may include:
    - Siting improvements away from sensitive soils;
    - Soil amendment to improve soil strength and cohesion properties;
    - Removal of unstable soil;
    - Allowable slope gradients to reduce landslide and lateral spread potential;
    - Site grading and drainage recommendations.
- Grading should be conducted in accordance with relevant state and local regulations and recommendations of a geotechnical report.

The State Water Board does not have the authority impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that environmental impacts related to off-site landsliding, lateral

spreading, subsidence, liquefaction, or collapse resulting from site disturbance may be potentially significant and unavoidable.

Impact 9.4. Compliance responses to the General Order at composting operations may have the potential to be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) that would create substantial risks to life or property.

For the reasons discussed in Impact 9.3 and because mitigation for this impact is beyond the authority of the State Board, this impact is considered to be significant and unavoidable.

Mitigation 9.4. See Mitigation Measure 9.3.

Impact 9.5. Compliance responses to the General Order at composting operations may have the potential to have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

The General Order allows multiple options for composting operations to dispose of wastewater, such as construction of detention ponds, tanks, on-site septic systems, or off-site transport to a municipal wastewater treatment plant. If on-site soils are not capable of supporting treatment through an on-site septic system or other on-site system, other options are available.

The State Water Board is not able to predict which operations would select the on-site waste water option; where they are located; the size or capacity of the operation; and the specific operations chosen to treat the wastewater. Because of the variability in soil conditions and operations throughout the state, it would be misleading to randomly select a composting operation for a more thorough analysis.

Therefore, it is not possible to specify what specific resources would be affected, quantify the extent of the impact compared to baseline conditions, draw conclusions regarding the significance of possible impacts, or identify specific measures necessary to mitigate impacts to a less-than-significant level. Individual operations would need to be evaluated further at the project level. Therefore, this impact is considered to be potentially significant.

Mitigation Measure 9.5. The General Order provides options to mitigate this impact for areas where soils are incapable of supporting septic tanks or alternative on-site waste water disposal systems. Composting operationswould have the opportunity to select from other disposal options, including above-ground tanks or off-site disposal. The following practices may further reduce impacts from soils that are incapable of supporting septic tanks or alternative on-site waste water disposal systems.

- Preparation of site-specific soil evaluation by licensed professionals to evaluate specific soil conditions and recommend appropriate options for waste water disposal.
- Selection of appropriate design of alternative on-site systems that do not rely on site soils, or off-site disposal

The State Water Board does not have the authority to impose mitigation measures that are not included in the General Order. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable.

Impact 9.6. Compliance with the General Order at composting operations is not expected to 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.

Structural improvements such as pads, detention ponds, monitoring wells, or wastewater treatment structures that are constructed to comply with the General Order could expand the footprint of an existing or new compost operation; expansion would increase the likelihood of overlapping with mineral resources.

Mineral resources are defined as deposits that are potentially valuable, and for which a reasonable prospect exists for future economic extraction. Thus, mineral resources are intended to be reserved until legal extraction is technically and economically feasible.

Most mineral resources in California are known and can be identified prior to expansion or development of properties. California Geological Survey's Mineral Land Classification Project maintains numerous mining maps and publications dealing with identification and classification of regional mineral resources.

It is reasonably foreseeable that a project specific CEQA evaluation would be required for each new composting operation, where project specific mineral-related impacts can be fully analyzed and project specific mitigation measures can be properly identified. Moreover; because of the typical subsurface nature of mineral occurrence, it is unlikely that surface and shallow subsurface structures would create a condition where an important mineral resource is inaccessible. Therefore, this impact is expected to be less than significant.

Mitigation Measure 9.6. None required.

Impact 9.7. Compliance with the General Order at composting operations is not expected to 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.

For the reasons stated in Impact 9.6, compliance with the General Order at composting operations is expected to have a less than significant impact.

Mitigation Measure 9.7. None required.

Impact 9.8. Development of new composting operations, unrelated to the General Order, may have the potential to expose people or structures to potential adverse effects, including the risk of loss, injury, or death from 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, strong seismic ground shaking, seismic-related ground failure (including liquefaction), or landslides; result in substantial soil/erosion or loss of topsoil; be located on a geologic unit or soil that is unstable or that would become unstable because of the project and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; be located on expansive soils as defined in Table 18-1-B of the Uniform Building Code (1994) that would create substantial risks to life or property; or have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

New composting operations may be constructed and located anywhere within the state, consistent with local land use restrictions. It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific impacts to geological resources can be fully analyzed and project-specific mitigation measures can be properly identified. It is further anticipated that compliance responses would be constructed consistent with design guidelines such as minimum setbacks, maximum height requirements and seismic design requirements.

Generally, construction activities related to development of new composting operations, especially new large -scale commercial operations, may consist of construction of large composting operations pads, access roads, or buildings. Construction of a new composting operation, unrelated to the General Order, may require substantially more disturbance of undeveloped areas, compared to construction activities related to the General Order. Therefore, impacts related to seismic hazards, unstable soil and sensitive soil conditions from development of new compost operations, unrelated to the General Order, may be significant.

Mitigation Measure 9.8. *See Mitigation measures 9.1 through 9.3, and 9.5.*

The State Water Board does not have authority to require implementation of mitigation related to seismic hazards and soil conditions for new operations, unrelated to the General Order. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts related to seismic hazards and soil conditions may be unavoidable.

Impact 9.9. Development of new composting operations, unrelated to the General Order, is not expected to 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; or 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.

New composting operations may be constructed and located anywhere within the state, consistent with local land use restrictions. Consequently, a new composting operation, unrelated to the General Order, may have the potential to be sited in an area underlain by mineral resources. However, it is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific mineral

resources and rights can be fully analyzed and project specific mitigation measures can be properly identified.

Mineral resources are defined as deposits that are potentially valuable, and for which a reasonable prospect exists for future economic extraction. Thus, mineral resources are intended to be reserved until legal extraction is technically and economically feasible.

Most mineral resources in California, particularly important minerals are known and can be identified prior to expansion of existing sites. California Geological Survey's Mineral Land Classification Project maintains numerous mining maps and publications dealing with identification and classification of regional mineral resources.

Even if some minerals are not identified at the time a composting operation is planned, constructed, and operated, it is unlikely that the incidental construction of a composting operations would create a condition where a subsurface mineral resource is inaccessible forever. This impact is considered less than significant.

Mitigation Measure 9.9. *None required.*

10. HAZARDS AND HAZARDOUS MATERIALS

This chapter describes existing hazards and hazardous materials in California and analyzes potential impacts that may occur from compliance with the General Order.

10.1. ENVIRONMENTAL SETTING

For purposes of this analysis, the term “hazardous materials” refers to both hazardous materials and hazardous wastes. Under federal and state laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). The term “hazardous material” is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment (Health & Saf. Code, ch. 6.95, § 25501, subd.(o).).

Potential Presence of Hazardous Materials in Soil and Groundwater

Hazardous materials, including but not limited to pesticides and herbicides, heavy metals, volatile organic compounds, and oil and gas may be present in soil and groundwater in areas where land uses have resulted in leaking fuel or chemical storage tanks or where other releases of hazardous materials have occurred. Land uses that typically involve handling of hazardous materials include commercial or industrial operations, as well as agricultural areas where soils may contain pesticides and herbicides.

Various federal, state, and local regulatory agencies maintain lists of hazardous materials sites where soil and/or groundwater contamination is known or suspected to have occurred, typically as a result of leaking storage tanks or other spills. These facilities are readily identified through regulatory agency database searches, such as the State Water Board’s GeoTracker online database and the California Environmental Protection Agency (CalEPA) Department of Toxic Substances Control’s (DTSC) Envirostor online database and the Cortese List. For example, the GeoTracker database identified more than 60,000 cleanup sites within the state. These facilities included hazardous materials cleanup sites, leaking underground storage tank (UST) cleanup sites, land disposal cleanup sites, and cleanups on military properties as shown in Table 10-1 (GeoTracker, 2013).

Table 10-1 State Water Board GeoTracker-Listed Cleanup Sites

SITE TYPE SUMMARY REPORT BY REGIONAL BOARD BOUNDARY FOR ALL SITE TYPES RUN REPORT

ORGANIZATION NAME	Cleanup Program Site	LUST Cleanup Site	Land Disposal Site	Military Cleanup Site	Military Privatized Site	Military UST Site	Non-Case Information
NORTH COAST RWQCB (REGION 1)	656	2244	158	64	1	48	0
SAN FRANCISCO BAY RWQCB (REGION 2)	2071	10451	137	403	25	617	0
CENTRAL COAST RWQCB (REGION 3)	398	1987	82	111	20	311	0
LOS ANGELES RWQCB (REGION 4)	3260	8539	197	496	0	85	0
CENTRAL VALLEY RWQCB (REGION 5F)	663	2885	705	59	2	51	0
CENTRAL VALLEY RWQCB (REGION 5R)	202	917	44	0	0	0	0
CENTRAL VALLEY RWQCB (REGION 5S)	1678	4627	314	705	83	540	0
LAHONTAN RWQCB (REGION 6T)	90	478	28	37	0	7	0
LAHONTAN RWQCB (REGION 6V)	71	537	103	961	0	275	0
COLORADO RIVER BASIN RWQCB (REGION 7)	55	864	98	139	0	114	0
SANTA ANA RWQCB (REGION 8)	460	4187	170	170	0	176	0
SAN DIEGO RWQCB (REGION 9)	2346	3406	132	501	3	799	0
NO REGIONAL BOARD SPECIFIED	5	1	3	0	0	0	0
TOTALS	**11955**	**41123**	**2171**	**3646**	**134**	**3023**	**0**

Wildfire Hazards

While all of California is subject to some degree of wildfire hazard, there are specific features that make certain areas more hazardous. CALFIRE is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors (Pub. Resources Code, §§ 4201–4204 and Gov. Code, §§ 51175–51189). Factors that increase an area's susceptibility to fire hazards include slope, vegetation type and condition, and atmospheric conditions. CALFIRE has created maps of each county that depict the fire hazard severity zoning of the area. These maps can be obtained at: http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones.php.

These maps identify high fire hazard areas that are subject to regulations designed to minimize fire potential and assist local planning agencies to develop policies and programs for these high risk areas.

Hazardous Wildlife Attractants on or near Airports

Most public-use airports have large tracts of open, undeveloped land that provide added margins of safety and noise mitigation. These areas can also present potential hazards to aviation if they encourage wildlife to enter an airport's approach or departure airspace or air operations area. Constructed or natural areas such as poorly drained locations, detention ponds, roosting habitats on buildings, landscaping, odor causing rotting organic matter disposal operations, wastewater treatment plants, agricultural or aquaculture activities, surface mining, or wetlands can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. Even small facilities, such as fast food restaurants, taxicab staging areas, rental car facilities, aircraft viewing areas, and public parks, can produce substantial attractions for hazardous wildlife.

The United States Department of Transportation Federal Aviation Administration (FAA) published an advisory that ranks wildlife groups commonly involved in damaging strikes in the United States according to their relative hazard to aircraft. The ranking is based on 47,212 records in the FAA National Wildlife Strike Database for years 1990 through 2003. These hazard rankings, in conjunction with site-specific Wildlife Hazards Assessments, will help airport

operators determine relative abundance and use patterns of wildlife species, and help focus hazardous wildlife management efforts on those species most likely to cause problems at an airport (FAA, 2007).

In California, there are currently 946 airports where 692 are for private use and 254 are for public use (FAA, 2013). Basic airport facilities and contact information, data downloads, and lists of emergency plan airports can be found at http://www.faa.gov/airports/airport_safety/airportdata_5010/. Maps of airports in California can be found at http://www.california-map.org/airports.htm.

Pathogens and Vectors

Pathogens are disease-causing organisms, such as certain bacteria, viruses and parasites as defined in California Code of Regulations, title 14, section 17852(a)(31). Vectors includes any insect or other arthropod, rodent, or other animal capable of transmitting causative agents of human disease as defined in title 14 section 17852(a)(38). Vectors include, but are not limited to, flies, mosquitoes, rodents, and birds that can spread disease by carrying and transferring pathogens. Vectors can also transmit pathogens to humans and other hosts physically through contact or biologically by playing a specific role in the life cycle of the pathogen.

10.2. ENVIRONMENTAL ANALYSIS

10.2.1. Approach and Methods

The following evaluation of hazards and hazardous materials was prepared by considering applicable regulations and guidelines, and typical construction activities and operations attributable to the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis takes into consideration the questions and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order, and a summary of possible impacts from development of new composting operations, unrelated to the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will examine these individual projects to determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific studies that could include further modeling or analysis of these particular impacts related to hazards and hazardous materials on a project-by-project basis.

10.2.2. Thresholds of Significance

An impact related to hazards and hazardous materials is considered significant if the project would result in any of the following, adapted from Appendix G of the CEQA Guidelines:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- 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;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- 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 create a significant hazard to the public or the environment;
- 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, the project would result in a safety hazard for people residing or working in the project area;
- For a project located within the vicinity of a private airstrip, the project would result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;
- 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; or,
- Generate vectors (flies, mosquitoes, rodents, etc.) to such an extent that the applicable enforcement agency determines that any of the vectors occur in numbers considerably in excess of those found in the surrounding environment, disseminate widely from the property, and cause harmful effects on the public health of the surrounding population.

10.2.3. Impacts and Mitigation Measures

Impact 10.1. Compliance with the General Order at composting operations may have the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Construction activities associated with modification of existing or construction of new composting operations to comply with the General Order may involve site surface and subsurface disturbance through excavation, grading, and trenching. If hazardous materials such as pesticides or herbicides, volatile organic compounds or other hazardous materials are present in excavated soil or groundwater, hazardous materials could be released to the environment resulting in exposing construction workers or the public to potential health risks depending on the nature and extent of any contamination encountered. Contaminated soil or groundwater could also require disposal as a hazardous waste.

Construction activities would likely require use of hazardous materials such as fuels for construction equipment, oils, and lubricants. The types and quantities of hazardous materials would vary at each composting operation depending on the type and magnitude of the project. The improper use, storage, handling, transport, or disposal of hazardous materials could result in accidental release of hazardous materials, thereby exposing construction workers, the public, and the environment, including soil and/or ground or surface water, to hazardous materials contamination.

The greatest potential for encountering contaminated soil and groundwater would be in areas where past or current land uses have resulted in leaks from fuel or chemical storage tanks or other releases of hazardous materials have occurred. Federal, State, and local agencies maintain databases of hazardous materials sites. As shown in Table 10-1, the GeoTracker database identified thousands of hazardous materials sites within California. If sites with soil and/or groundwater contamination are located at or in close proximity to existing or proposed new composting facilities, hazardous materials could be encountered in the subsurface during excavation and grading activities. Encountering hazardous materials in soil or groundwater during construction could further disperse existing contamination into the environment and expose construction workers or the public to contaminants, potentially resulting in health and safety risks to workers and the public.

Hazardous materials in soil and groundwater, if identified, could be managed appropriately according to applicable laws and regulations to reduce risks associated with exposures to individuals or releases to the environment. California OSHA regulations require preparation and implementation of a site health and safety plan to protect workers who could encounter hazardous materials, ensure that construction workers have specialized training and appropriate personal protective equipment. Regulations also require that excavated materials suspected of contamination be segregated, sampled, and hauled to a landfill licensed for this type of waste. If groundwater dewatering is required for excavation of subsurface facilities, the groundwater may require treatment prior to discharge, in accordance with applicable requirements.

Hazardous materials are subject to work place health and safety regulations that include handling instructions, spill prevention and cleanup plans, and emergency procedures. Compliance with the General Order is not expected to introduce any additional hazardous material not already in use and subject to federal, state, and/or local regulation of transport, storage, use, and disposal. Accordingly, compliance with the General Order is not expected to significantly increase or decrease the volume or type of hazardous materials in use or the consequent potential exposure of persons or the environment to hazardous materials through routine transport, use, or disposal.

Therefore, impact to the public or environment through the routine transport, use, or disposal of hazardous materials may be significant.

Mitigation Measure 10.1. Examples of recognized and accepted measures that are routinely required by regulatory agencies to ensure the safe use, handling, transport, and disposition of hazardous materials include:

- Managing hazardous materials in accordance with established handling and disposal protocols, preparing spill cleanup plans, and providing necessary spill prevention and clean up equipment onsite;
- Documenting the transport and disposition of hazardous materials in transport manifests;
- Handling individual hazardous materials consistent with best management practices (BMPs);
- Maintaining safe, secure, and appropriate storage facilities;
- Restricting access to and use of hazardous materials to trained personnel.

The State Water Board does not have the authority to approve modifications to existing or new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Even with mitigation, it is possible that hazardous materials could be encountered during modification or construction of composting operations.

Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts related to hazardous materials may be unavoidable.

Impact 10.2. Compliance with the General Order at composting operations may have the potential to 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.

For the reasons stated in Impact 10.1, environmental impacts through accidental release of hazardous materials at existing and new composting operations may have the potential to be significant.

Mitigation Measure 10.2. See Mitigation Measure 10.1.

Impact 10.3. Compliance with the General Order at composting operations may have the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

For the reasons stated in Impact 10.1, environmental impacts related to hazardous emissions may have the potential to be significant

Mitigation Measure 10.3. See Mitigation Measure 10.1.

Impact 10.4. Compliance responses to the General Order at composting operations may have the potential to be located on a site which is included on a list of hazardous

materials sites compiled pursuant to Government Code section 65962.5 may have the potential to create a significant hazard to the public or the environment.

Responses to the General Order may result in expansion of a composting operation's existing or planned footprint. It is anticipated that compliance responses that expand the footprint of new and existing composting operations would be designed to be consistent with applicable land use policies and regulations. It is anticipated that appropriate land use permits from local jurisdictions would be secured prior to construction of new composting operations or modification of existing composting operations. It is further anticipated that compliance responses would be developed in compliance with general plans and zoning ordinances establishing design guidelines such as minimum setbacks.

The State Water Board does not have the authority to impose mitigation measures that would make this impact less than significant. For the reasons stated in Impact 10.1, environmental impacts related to expansion of existing or new composting operations on sites designated as hazardous materials sites (Cortese) compiled pursuant to 95962.5 of the California Government Code may be significant.

Mitigation Measure 10.4. Examples of recognized and accepted measures to mitigate potential impacts from hazardous materials sites include:

- Prior to design of modifications that would expand the footprint of existing composting operations, the discharger should consult the list maintained by DTSC pursuant to Government Code section 65962.5 for all known hazardous waste sites statewide. DTSC manages the Hazardous Waste and Substances Sites (Cortese) List which may be used as a planning document by the state, local agencies and developers to comply with the CEQA requirements in providing information about the location of hazardous materials release sites;
- Prior to final project design and any earth disturbing activities at composting operations, the discharger responsible should conduct a Phase I Environmental Site Assessment (Phase I). The Phase I should be prepared by a Registered Environmental Assessor or other qualified professional to assess the potential for contaminated soil or groundwater conditions at the project site. The Phase I should include a review of appropriate federal, state, and local hazardous materials databases to identify hazardous waste sites at on-site and off-site locations within a one-quarter mile radius of the project location. This Phase I should also include a review of existing and past land uses through aerial photographs, historical records, interviews of owners and/or operators of the property, observations during a reconnaissance site visit, and review of other relevant existing information that could identify the potential existence of contaminated soil or groundwater. If no contaminated soil or groundwater is identified or if the Phase I does not recommend any further investigation then the discharger may proceed with final project design and construction. If existing soil or groundwater contamination is identified, and if the Phase I recommends further review, the applicant or agency(ies) responsible should conduct follow-up sampling to characterize the contamination and identify any remediation consistent with applicable regulations prior to any earth disturbing activities. The report should include, but is not limited to, activities performed for the assessment, summary of anticipated contaminants and contaminant

concentrations at the proposed construction site, and recommendations for appropriate handling of any contaminated materials during construction;

- For new construction, preclude the siting of a new composting operation at a property polluted with hazardous waste. Require the discharger, as part of the NOI Technical Report to consult the list maintained by DTSC pursuant to Government Code section 65962.5 for all known hazardous waste sites statewide. DTSC manages the Hazardous Waste and Substances Sites (Cortese) List which may be used as a planning document by the state, local agencies and developers to comply with the CEQA requirements in providing information about the location of hazardous materials release sites. This will mitigate the impact to less than significant.

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion, and discloses that potential impacts may be significant and unavoidable.

Impact 10.5. Compliance with the General Order at composting operations may have the potential to result in a safety hazard for people residing or working in the project area for a project located within an area covered by 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.

The footprint of composting operations can range from 1 to more than 100 acres, which may result in detention ponds up to 15 acres. The detention pond may attract wildlife. If sited near an airport, the detention pond may present a potential hazard to aviation, as wildlife may enter an airport's approach or departure airspace or air operations area. Therefore, impact to safety hazard for people residing in the area or working in the composting operation located within an airport land use plan or within two miles of a public airport may be significant.

Mitigation Measure 10.5. For detention ponds proposed within 5 statute miles of an airport's air operations area, notify the FAA Regional Airports Division office and the airport operator of the operation as early in the process as possible. Such modifications must receive an FAA Determination of No Hazard prior to project approval.

The State Water Board does not have the authority to approve modifications to existing or construction of new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion, and discloses that potential impacts may be significant and unavoidable.

Impact 10.6. Compliance with the General Order at composting operations may have the potential to result in a safety hazard for people residing or working in the project area for a project located within the vicinity of a private airstrip.

For the reasons stated in Impact 10.5., compliance with the General Order at composting operations may have the potential to be significant.

Mitigation Measure 10.6. See Mitigation Measure 10.5.

Impact 10.7. Compliance with the General Order at composting operations is not expected to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Compliance with the General Order at composting operations is not expected to impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, impact to an adopted emergency response plan or emergency evacuation plan is expected to be less than significant.

Mitigation Measure 10.7. None required.

Impact 10.8. Compliance with the General Order at composting operations is not expected to 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.

Compliance with the General Order is not expected to increase population or housing in the wildland areas. Most composting operations consist of paved access roads, large pads, or buildings. Therefore, exposure to a significant risk of loss, injury, or death involving wildland fires is expected to be less than significant.

Mitigation Measure 10.8. None required.

Impact 10.9. Compliance with the General Order at composting operations may have the potential to generate vectors (flies, mosquitoes, rodents, etc.) to such an extent that the applicable enforcement agency determines that any of the vectors occur in numbers considerably in excess of those found in the surrounding environment, disseminate widely from the property, and cause harmful effects on the public health of the surrounding population.

A composting operation may choose to manage wastewater generated using detention ponds. Mosquitos breed in stagnant water and their habitats are usually found near lakes and ponds. Wastewater detention ponds that are not properly maintained may create a breeding environment for mosquitos. Therefore, presence of vectors exceeding regulatory agency thresholds as a result of compliance with the General Order may be significant.

Mitigation Measure 10.9. Following are recognized and accepted measures to mitigate potential impacts from vectors such as mosquitoes:

California Code of Regulations, title 14, chapter 3.1, article 6, section 17867 requires that “all activities shall be conducted in a manner that minimizes vectors, odor impacts, litter, hazards, nuisances, and noise impacts…” The article gives the EA and CalRecycle broad discretion to

ensure that these operations do not provide a suitable environment to promote generation of vectors. In addition, local pest management agencies (i.e. mosquito abatement districts, environmental health departments) have authority to inspect operations and enforce compliance with vector control. Vector populations can be kept under control using best management practices, such as insect traps, chemical treatment, or minimizing stagnant waters.

Because the State Water Board does not have the authority to impose mitigation measures as described above, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts from vectors may be unavoidable.

Impact 10.10. Development of new composting operations, unrelated to the General Order, may have the potential to: create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving release of hazardous materials into the environment; emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; 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, may have the potential to create a significant hazard to the public or the environment; **result in a safety hazard for people residing or working in the project area for a project located within an area covered by 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*****; result in a safety hazard for people residing or working in the project area for a project located within the vicinity of a private airstrip; impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; 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; generate vectors (flies, mosquitoes, rodents, etc.) to such an extent that the applicable enforcement agency determines that any of the vectors occur in numbers considerably in excess of those found in the surrounding environment, disseminate widely from the property, and cause harmful effects on the public health of the surrounding population.***

The State Water Board cannot speculate on how many or where new composting operations will be constructed. Generally, construction activities related to development of new composting operations, especially new large -scale commercial operations, may consist of construction of large composting operations pads, access roads, or buildings.

Construction of a new composting operation, unrelated to the General Order, is likely to require substantially more disturbance of undeveloped areas, compared to construction activities related to the General Order. It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific impacts can be fully analyzed and project specific mitigation measures can be properly identified.

Therefore, environmental impacts related to hazards such as hazardous materials, safety hazards or vectors, resulting from development of new composting operations, unrelated to the General Order, may be significant. ***Mitigation Measure 10.10.*** *Anticipated mitigation measures that can be implemented by other regulatory agencies may consist of measures similar to those identified in Mitigation Measures 10.1., 10.4., 10.5., and 10.9.*

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion, and discloses that potential impacts related to hazards such as hazardous materials, safety hazards or vectors, resulting from development of new composting operations, unrelated to the General Order, may be significant and unavoidable.

11. HYDROLOGY AND WATER QUALITY

This chapter describes existing hydrology and water quality in California and analyzes potential impacts that may occur from compliance with the General Order.

11.1. ENVIRONMENTAL SETTING

Hydrology

Surface Water

Surface waters of California are located in six regions, each with similar hydrologic characteristics including distinct precipitation, runoff, and geologic conditions (California Department of Water Resources, 1994a). Table 11-1 shows seasonal patterns, precipitation, and runoff characteristics of the six regions. These surface water resources are diverse and varied, ranging from large and long-reaching perennial rivers in the north and central areas of the state, to primarily intermittent waterways along much of the southern coast, to desert washes and dry lakes in the inland east and south. Major waterways include the Trinity River system which drains the northern reaches of California's Coastal Range and the southern Cascades; the Sacramento-San Joaquin River system, which is the largest river system in the state and which drains the southern tip of the Cascade Range, the western Sierra Nevada, the eastern Coastal Range, and the Central Valley; and the Colorado River, which flows along California's eastern border and into Mexico. There are many smaller perennial and intermittent waterways that drain California's seaboard and the eastern slope of the Sierras.

Northern portions of the state generally receive substantially more precipitation than southern portions of the state. Snowpack in the Sierra Nevada and southern Cascades serves as a significant reservoir for water storage. Snowpack accumulates over the winter and early spring months, and gradually melts in late spring and summer, feeding surface flows, filling reservoirs, and recharging groundwater. Captured snowmelt, especially east and north of the Central Valley, is highly managed, and is released from reservoirs to supply regional agriculture and urban needs, and to provide water for export to other areas of the state.

Water from the Sacramento-San Joaquin Delta is pumped from the Clifton Court Forebay into a network of aqueducts and reservoirs that supply water to Central and Southern California for agricultural and urban uses. Other state, federal, and local water projects provide water to specific cities or areas. Such projects include diversions from the Sierra Nevada to the San Francisco Bay Area, from the Owens Valley to Los Angeles, and from the Colorado River to the Imperial Valley and San Diego. Other water projects provide surface water supply to Santa Barbara, Blythe, San Luis Obispo, the northern San Francisco Bay Area, Vacaville, and other urban areas.

In recent decades, California's natural and engineered water systems have come under increasing demand pressure, in an attempt to meet urban, agricultural, industrial, and environmental water requirements. During dry years, it is almost impossible to meet the needs of all water users, and recent droughts have resulted in reductions in water supplies for urban, environmental, and agricultural uses.

Table 11-1 Watershed Characteristics of California

REGION	SEASONAL PATTERNS	RUNOFF CHARACTERISTICS	PRECIPITATION
North Coast (Region 1)	Inland: Distinct rainy, cool winters and hot, dry summers, Coastal: Cool and wet year round with little temperature variation.	Highest peak discharges recorded in the state, highest total sediment yields	Dominated by rainfall. Average annual precipitation is 53 inches.
Sacramento, San Joaquin and Tulare Lake (Region 5)	Valley: Hot, dry summers and cool, wet winters Mountains: Mild summers with intermittent thundershowers, heavy winter snowfalls above 5,000 feet	Prolonged spring runoff fed by Sierra Nevada snowpack, low sediment yields due to widespread vegetation and stable rock types/soils, locally high sediment yields due to land uses (e.g., logging, grazing, and urbanization)	Valleys receive winter rainfall, and mountains receive moderate to heavy snowfall, total average annual precipitation ranges from 36 inches in the Sacramento River region to 13-14 inches for the San Joaquin and Tulare Lake regions
San Francisco Bay and Central Coast (Regions 2 and 3)	Coast: Cool and foggy year-round with rain in the winter, small seasonal temperature variations, Inland areas: Warmer, dry summers with cooler, rainy winters	High peak runoffs due small, steep watersheds, local rivers susceptible to severe flooding during high rainfall events, some watersheds produce high sediment yields due to unstable rock types/soils	Precipitation from rainfall, insignificant snowfall Northern area average annual precipitation is 31 inches, with > 50 inches in some areas. Southern area average annual precipitation is 20 inches
North and South Lahontan (Region 6)	Valleys: Semi-arid high desert terrain, hot, dry summers, locally intense thunderstorms, mild, dry winters, Mountains: Cool to mild summers, cold winters, regionally heavy snowfall	Valleys: High peak runoffs in ephemeral drainages, Watersheds except Owens River are short, steep ephemeral drainages, stable rock types/soils result in low, coarse-textured sediment yields Mountains: Extended spring runoff with locally high sediment yields in Sierra	Valleys: Low to moderate precipitation totals due to rain shadow effects of Sierra Nevada and Cascade Mountains; Mountains: Regionally heavy winter snowfall and intense summer thunderstorms, average annual precipitation ranges from 8 inches in the south to 32 inches in the north
South Coast (Regions 4, 8, and 9)	Mediterranean climate with dry years interrupted by infrequent high precipitation years, warm, dry summers and mild, wet winters. Inland: Summer temperatures can exceed 90 degrees, intense subtropical storms	Watersheds are largely ephemeral and fed by rainfall, rivers susceptible to frequent flooding due to high peak discharge events, sediment yields locally high due urbanization, low vegetation cover and unstable soils, debris flows and mudflows frequent in some smaller drainages	High rainfall with insignificant snowfall contribution, locally heavy storms have highest 24-hour rainfall totals in the state, average annual precipitation is 18.5 inches
Colorado Desert (Region 7)	Arid desert region with hot, dry summers, locally intense thunderstorms, mild winters, rainfall is limited to a few storms per year	Low runoff due to limited rainfall, but locally heavy during infrequent storm events, overall sediment yields low, but produce debris flows during storms	All precipitation falls in the form of rain, region has lowest yearly precipitation totals in the state, some areas receiving less than 2 inches, average annual regional rainfall is 5.5 inches

Sources: Mount (1995), California Department of Water Resources (1994a)

Groundwater

Groundwater is used extensively in many areas of the state to support urban, agricultural, and industrial use, especially in areas where surface water supplies are limited, or infrastructure for delivery of surface water is lacking. Such areas include California's Central Valley, southern portion of the San Francisco Bay Area, greater Los Angeles area, and inland desert areas of southern California.

Approximately 40 percent of total land area of the state is underlain by groundwater basins. Storage capacity of these basins is estimated to be approximately 1.3 billion acre-foot of water. The fraction of water that is usable from these basins, about 143 million acre-foot, is more than three times the total capacity of the state's surface storage reservoirs. About 250 important groundwater basins are present throughout California, supplying about 40 percent of the state's water needs. Statewide, more than 15 million acre-foot of groundwater are extracted for agricultural, municipal, and industrial uses. Table 11-2 lists California's major groundwater basins by region.

Many of California's groundwater basins are located in arid valleys, and are recharged by percolation of rainfall and surface water flows. Recharge occurs more readily in areas of coarse sediments, which are usually located near alluvial fans associated with mountain ranges. Percolation in southern California occurs only during periods of intense precipitation, whereas northern California groundwater basins often receive direct recharge from precipitation annually (California Department of Water Resources 2003). The location and extent of impermeable, confining layers in alluvial deposits that contain groundwater basins play a major role in the amount and rate of recharge of percolating water and overall quality of groundwater.

Groundwater overdraft has been a significant problem in California for many decades. In some portions of the Central Valley, groundwater levels have been depleted by nearly 60-million acre feet since about 1960 (Faunt, 2009). Although state and local agencies are collaborating to reduce groundwater overdraft in many areas of the state, workable and realistic solutions are difficult to develop. As a result, groundwater overdraft is expected to continue for decades across the Central Valley, San Francisco Bay Area, southern desert areas, and several other areas. Over an extended period, extensive groundwater overdraft can result in irreversible land subsidence as depleted aquifers compact. Areas of significant land subsidence are characterized by reduced aquifer capacity and lowered land surfaces relative to historic conditions.

Table 11-2 Major Groundwater Basins of California

REGION	MAJOR GROUNDWATER BASINS	EXTRACTION (AC-FT/YR)
1 - North Coast	Tule Lake, Siskiyou Butte Valley, Shasta Valley, Scott River Valley, Hoopa Valley, Smith River Plain, Mad River Valley, Eureka Plain, Eel River Basin, Covelo Round Valley, Mendocino County	242,338
2 - San Francisco Bay	Petaluma Valley, Napa-Sonoma Valley, Suisun- Fairfield Valley, Santa Clara Valley, Livermore Valley, Marin County, San Mateo County	190,128
3 - Central Coast	Soquel Aptos, Pajaro Basin, Salinas Basin, S. Santa Clara - Hollister, Carmel Valley-Seaside, Arroyo Grande/Nipomo Mesa, Cuyama Valley, San Antonio, Santa Ynez Valley, South Central Coast, Upper Salinas, San Luis Obispo	1,075,800
4 - Los Angeles	Central Basin, West Coast Basin, San Fernando Valley, Raymond Basin, San Gabriel, Upper Ojai Valley, Fox Canyon	808,000
5 - Central Valley	Butte County, Colusa County, Tehama County, Glenn County, Sacramento County, Western Placer County, Yuba County, Sutter County, Eastern Solano County, Yolo County, Sierra Valley, Goose Lake Basin, Big Valley, Fall River Valley, Redding Basin, Almanor Lake Basin, Upper Lake Basin, Lake County/Scotts Valley, Kelseyville, Valley Basin, Coyote Valley, Middletown-Colalyomi Valley, San Joaquin County, Modesto Basin, Turlock Basin, Merced Basin, Chowchilla Basin, Madera Basin, Delta Mendota, Kings Basin, Tulare Lake Basin, Kaweah Basin, Tule Basin, Westside Basin, Pleasant Valley Basin, Kern County Basin	8,302,100
6 - Lahontan	Surprise Valley, Honey Lake Valley, Long Valley Basin, Thermo-Madeline Plains, Willow Creek Valley, Secret Valley, Owens Valley, Death Valley, Mojave River Valley, Antelope Valley	397,200
7 - Colorado River	Warren Valley, Coachella Valley, Cuckwalla	114,740
8 - Santa Ana	Orange County (also in Region 9), San Bernardino Basin Area, Riverside Basin Areas 1 and 2, Colton Basin	498,180
9 - San Diego	Temecula Valley, San Juan Valley, El Cajon Valley, Sweetwater Valley, Otay Valley, Warner Valley, San Luis Ray	34,000 (total does not include Warner Valley or San Luis Rey - extraction rates unknown)

Sources: California Department of Water Resources (1994a), and California Department of Water Resources (2003).

Water Quality

Monitoring for water quality protection purposes is conducted through a variety of federal, state, and local programs. Water quality issues differ depending upon location and type of water resource; size and extent of watershed and water resources; location with respect to potential pollutant sources; seasonal and climatic factors; and other interacting physical, chemical, and biological processes.

Common classes of water quality pollutants regulated under state and federal regulations include inorganics, pathogens, and organic compounds. Inorganics include nutrients (phosphorus and various forms of nitrogen including nitrate), salts, and metals (aluminum, antimony, arsenic, copper, cyanide, lead, mercury, nickel, etc.). Pathogens include viruses and bacteria. Other organic compounds include VOCs, petroleum products (fuels, oils, greases, and pesticides, etc.). Water quality physical parameters such as dissolved oxygen, pH, and electrical conductivity are also regulated.

Surface Water Quality

Surface water quality in California is highly variable, and ranges from very high quality lakes and streams in the Sierra Nevada and Cascade mountains and in remote or undeveloped areas, to highly polluted drainage courses that carry municipal, agricultural, and industrial wastewater. Surface water quality is affected by agricultural, urban, and industrial sources of pollution. Point sources, which are defined as specific outfalls discharging into natural waters, are easily identified and are regulated by California's Regional Water Boards and the USEPA. Nonpoint sources, including polluted runoff from urban and agricultural sources, are more challenging to identify. Nonpoint sources generally drain into a river or waterway over an extended area, or via many individual inlets. In some instances, waterways that receive polluted runoff and wastewater discharges serve as water supply sources for downstream water users.

Surface water quality depends on seasonal hydrologic patterns, mineral composition of watershed soils, topography, and sources of contaminants. During summer low-flow conditions, surface water quality characteristics of most importance to aquatic life are temperature, dissolved oxygen, turbidity, bio-stimulatory nutrients (e.g., nitrogen and phosphorus), nuisance algae growth, and toxic constituents (e.g., un- ionized ammonia and residual chlorine). During higher stream flow conditions common during winter, water quality is influenced more by storm water runoff and associated pollutants (e.g., sediment, oil and grease from automobiles and paved areas), nutrients from agricultural fields and livestock boarding areas, and organic litter (e.g., leaves and grass clippings). The quality of surface water used for domestic, agricultural, and industrial supply is characterized by parameters such as total dissolved solids content, turbidity, taste and odor, and levels of toxic contaminants.

The state evaluates current water quality conditions and prioritizes funding efforts for protection, cleanup, and monitoring programs through individual water quality assessments compiled into the State Water Board section 305(b) reporting process, which is mandated under the federal Clean Water Act (Clean Water Act § 303(d) List/305(b) Report).- The section 305(b) report includes section 303(d) lists, which identify water bodies that do not meet applicable water quality standards or designated beneficial uses subject to technology-based controls for waste discharges.

The 2010 Integrated Report, available on the State Water Board's website, at http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtm, enables users to search and view water quality assessment information about specific water bodies in California. The report indicates that most of the state's surface lakes and reservoirs, rivers and streams, freshwater wetlands, and estuaries only partially support all of their designated beneficial uses. Of the water bodies not supporting all of their uses, a small fraction fail to

support one or more designated beneficial uses all the time. The report also identifies physical or chemical constituents that cause beneficial uses not to be met.

In general, lake and reservoir beneficial uses are impaired predominantly by the presence of noxious weeds, trace metals, pesticides, taste, and odor problems. Rivers and streams are affected by a much larger variety of constituents, including sediment, pathogens, pesticides, and trace metals. Freshwater wetlands are affected primarily by trace metals, salinity, and other trace elements.

Groundwater Quality

Groundwater quality is also highly variable both by geographical area and by depth within an area. High-quality groundwater exists in the Sierra Nevada, Cascades, and along the eastern side of the Central Valley, but is in aquifers of limited extent. High-quality groundwater also exists in other locations around the state that have limited agricultural and urban development. Groundwater across much of the Coastal Range and western flank of the southern Central Valley, and southern deserts often have high levels of naturally-occurring salts and metals that make the water unfit for many uses. In areas with extensive urban or agricultural activities, waste discharges have induced high levels of salts and other contaminants that make groundwater unfit for consumption or other uses unless it is treated.

Major sources of groundwater pollution include historic and ongoing waste discharges, leaking USTs, and infiltration of polluted runoff from agricultural and urban areas. Nitrogen fertilizers in are of particular concern, because increased nitrate levels in groundwater exceed drinking water standards in many areas of the state (Harter and Lund, 2012). Groundwater pollution can be extremely costly and difficult to remediate.

The State Water Board's Groundwater Ambient Monitoring and Assessment Program (GAMA) is California's comprehensive groundwater quality monitoring program. The GAMA program collects data by testing untreated water in different types of wells for naturally-occurring and man-made chemicals and compiles them along with data from several other agencies. The data are available to view and query at: http://www.waterboards.ca.gov/water_issues/programs/gama/geotracker_gama.shtml. The GeoTracker GAMA is an online groundwater information system that gives the user access to water quality data from more than 200,000 discrete well locations and connects the user to other groundwater information.

Based on published hydrogeologic data from Department of Water Resources and the USGS, in 2000, the State Water Board created a map that shows where soil or rock conditions may be more vulnerable (or susceptible) to groundwater contamination, referred to as "hydrogeologically vulnerable areas". The map was created to address groundwater concerns over releases of methyl tert-butyl ether from leaking USTs. However, areas vulnerable to methyl tert-butyl ether may also be vulnerable to other contaminants released at the surface. Information on hydrogeologically vulnerable areas is available at: http://www.waterboards.ca.gov/water_issues/programs/gama/docs/hva_map_table.pdf.

Composting Operations

State Water Board reviewed GIS data for existing composting operations in California, and found that 9 operations are located within 100 feet of a stream or river; 120 are located in an identified groundwater basin; and 35 are located within a hydraulically vulnerable area as shown on Figure 11-1.

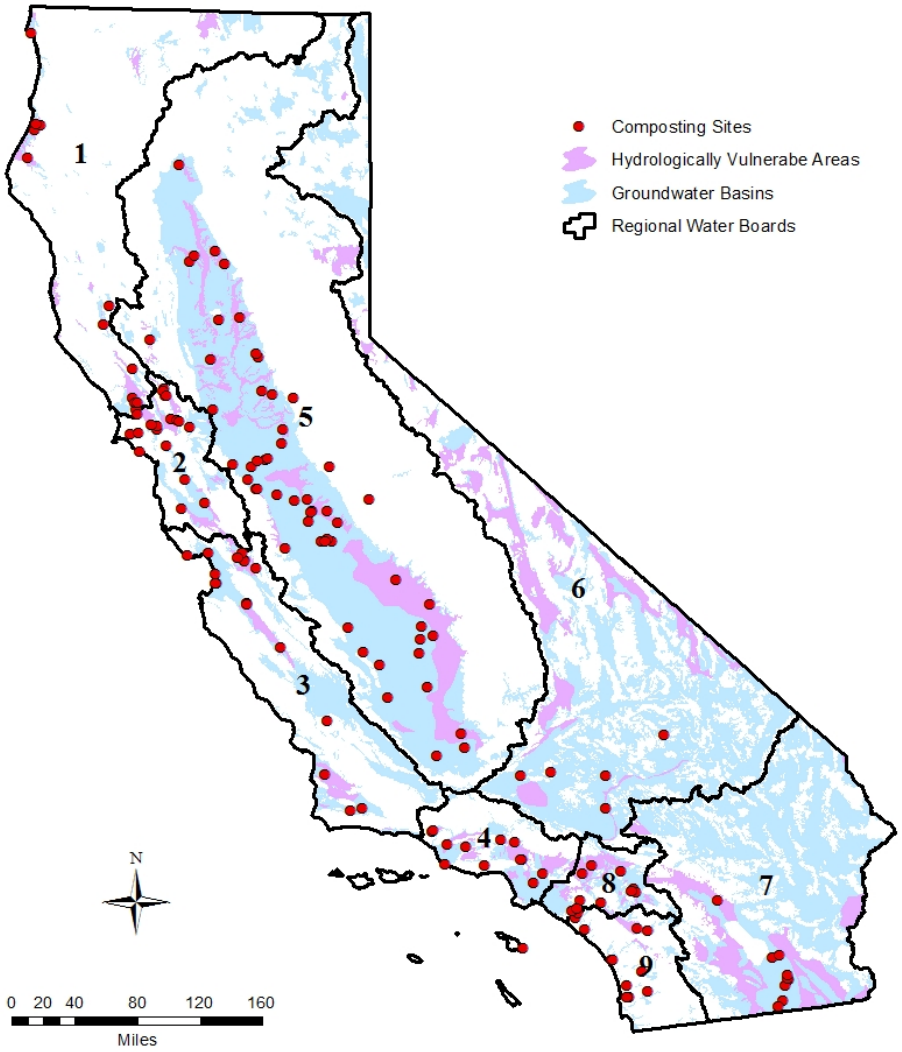


Figure 11-1 Composting Operations and Groundwater

11.2. ENVIRONMENTAL ANALYSIS

The following program-level evaluation of hydrology and water quality impacts was conducted considering the potential locations, applicable regulations and guidelines, and typical construction activities and operations attributable to the General Order.

11.2.1. Approach and Methods

The following evaluation of impacts related to hydrology and water quality was prepared considering applicable regulations and guidelines, and typical construction activities attributable to compliance with the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential significant impacts to hydrology and water quality takes into consideration the questions in Appendix G of the CEQA Guidelines and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will examine these individual projects to determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific studies that could include further modeling or analysis of these particular hydrology and water quality impacts on a project-by-project basis.

11.2.2. Thresholds of Significance

An impact related to hydrology and water quality is considered significant if it would result in any of the following issues adapted from Appendix G of the CEQA Guidelines:

- Violate any water quality standards or waste discharge requirements;
- 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);
- 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;

- 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;
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality;
- 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;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- 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.

11.2.3. Impacts and Mitigation Measures

Impact 11.1. Compliance with the General Order at composting operations may have the potential to result in violation of water quality standards or waste discharge requirements.

Activities related to modifying or constructing facilities (pads/ponds and working surfaces) at composting operations to comply with the General Order and composting related activities allowed under the General Order have the potential to degrade water quality.

Based on review of data and literature, organic wastes considered by this General Order contain nutrients such as nitrogen and phosphorus, metals, organic chemicals such as pesticides, and pathogens. Although the nutrients and contaminants are typically found as a low percentage of the feedstocks or compost, the presence of large amounts of feedstocks or compost can present concerns about contamination of groundwater and surface waters. Two primary sources of concern are nitrate leaching to groundwater and excess nutrients and high oxygen demand materials entering surface waters through storm water runoff (University of Georgia, 2003). Threats to surface and groundwater are further discussed in Impact 11.6.

If unmitigated, activities related to modifying or constructing facilities (pads/ponds and working surfaces) at composting operations and composting related activities allowed under the General Order is expected to have a potentially significant impact in violating water quality standards or waste discharge requirements.

Mitigation Measure 11.1. The General Order requires surface and groundwater quality to be maintained to protect beneficial uses. The following mitigation measures related to protection of water quality standards are included in the General Order:

- Prohibit composting operations within 100 feet of the nearest surface water body or water supply well;
- Protection of surface water quality:

- Design, construct, and maintain areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost to control and manage run-on and run-off resulting from a 25-year, 24-hour peak storm event;
- Protect areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost from surface flows and inundation resulting from a 25-year, 24-hour peak storm event;
- Design and operate storm water detention pond, berm, drainage conveyance systems to contain 25-year, 24-hour peak storm event at a minimum;
- Require a low permeability surface for Tier II operations drainage ditches.

- Protection of groundwater quality:
  - Prohibit storage, use, and land discharge of feedstock, additive, or compost stored, processed, or composted outside those areas allowed by the General Order;
  - Prohibit concentration of constituents in any detention pond that results in hazardous concentration levels;
  - Limit the use, handling, storage, and processing of additives and amendments using a tiered approach for permitted operations to manage risks and prevent conditions of pollution, contamination, or nuisance;
  - Require containment of all feedstocks, additives, amendments, and compost that are exposed to precipitation or run-on;
  - Require dischargers to submit a Notice of Intent, a technical report (describing site conditions, design, operations and monitoring information, and a compliance schedule [for existing operations]) , a Water and Wastewater Management Plan;
  - Limit feedstock type and allowable volume;
  - Design areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost to facilitate drainage and minimize ponding; reliably transmit liquid to containment structure; prevent conditions that can result in contamination, pollution, or nuisance; and provide year-round equipment access);
  - Minimize potential for piles of feedstocks, additives, amendments, or compost to become over-saturated and generate leachate;
  - Equip detention ponds with a pan lysimeter to confirm the pond liner integrity;
  - Require tier II composting operations to comply with additional design and construction requirements to further prevent leachate (low permeability working surfaces; low permeability and lined detention ponds equipped with pan lysimeter monitoring);
  - Require dischargers to maintain containment, control, and monitoring structures, and monitoring systems in good working order.

Mitigation measures listed above, if appropriately implemented to comply with the General Order, are expected to effectively prevent violation of water quality standards or waste

discharge requirements. Therefore, this impact is expected to be less than significant with mitigation.

Impact 11.2. Compliance with the General Order at composting operations is not expected to 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).

Water is critical to a composting operation to assist the decomposition that creates a stable finished compost product, as well as providing site-wide dust and odor control. However, compliance with the General Order is not expected to require new or expanded water supply resources. Although some facility structure modifications or construction required for General Order compliance may require additional water supply during construction and during startup, it is anticipated that these needs will be temporary.

Therefore, compliance with the General Order at composting operations is expected to have a less than significant impact on groundwater supplies.

Mitigation Measure 11.2. None required.

Impact 11.3. Compliance with the General Order at composting operations may have the potential to 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.

The General Order requires composting operations to manage wastewater using options such as detention ponds, storage tanks, or treatment facilities that may already be present at existing composting operations and that may or may not be compliance responses at new composting operations. Improvements to existing or construction of new operations would involve utilization of heavy equipment, grading, earth moving, stockpiling of soils, and other activities that may alter existing topographic and drainage features. Compaction of soils by heavy equipment could decrease the infiltration rates for surface sediments, causing increased runoff. This could result in changes to onsite drainage and, unless properly managed, result in altered or increased flooding onsite and downstream.

Installation and operation of the new proposed or existing facility may also result in removal or realignment of minor onsite drainages, which in some cases could eventually be tributary to natural waters. In lieu of existing drainages, engineered swales, detention ponds, discharge channels, storm water drains, and/or other storm water infrastructure would be installed to convey storm water from the composting operation. Unless designed and properly managed, composting operations have the potential to result in increased ponding or flooding, onsite or downstream.

Asphalt, roofs, sidewalks, concrete surfaces, and other surfaces prevent natural drainage and infiltration of storm water through soil. Surface water runoff has a greater volume and rate when

the site is paved or otherwise covered by an impervious surface, because surface water infiltration rates are reduced or eliminated compared to undeveloped, unpaved areas. As a result, increases in impervious surfaces result in increased surface runoff volumes and peak flow rates. These impervious surfaces can produce considerable changes to downstream hydrology compared to pre-development conditions, exceeding existing or proposed drainage system capacities, and resulting in increased or exacerbated flooding on site or downstream. As such, the impact has the potential to be significant.

Mitigation 11.3. The following mitigation measures are included in the General Order:

- Design, construct, and maintain areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost to control and manage run-on and run-off from a 25-year, 24-hour peak storm event;
- Protect areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost from surface flows associated with a 25-year, 24-hour peak storm event from inundation by surface flow;
- Design and operate the storm water detention pond, containment berm, and drainage conveyance systems to contain a 25-year, 24-hour peak storm event;
- Require low permeability drainage ditches for Tier II operations.

The effect of potential changes in drainage and flooding patterns would be minimized on a site-by-site basis by implementation and adherence to the NOI and accompanying technical report that would in turn ensure that the composting operation would minimize potential changes in storm water discharge rates and minimize onsite flooding. If the composting operation is designed, operated, and maintained in compliance with the General Order, this impact may be reduced to less than significant with mitigation.

Impact 11.4. Compliance with the General Order at composting operations may have the potential to 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.

Construction of new composting operations or improvements to existing operations would involve operation of heavy equipment, grading, earth moving, stockpiling of soils, and other activities that may alter existing topographic and drainage features. Compaction of soils by heavy equipment could decrease the infiltration rates for surface sediments, causing increased runoff. This could result in changes to drainage located onsite and, unless properly managed, result in altered or increased flooding onsite and downstream.

Installation and operation of the new proposed or existing operation could also result in removal or realignment of minor drainages located onsite, which in most cases would eventually be tributary to natural waters. In lieu of these existing drainages, engineered swales, detention ponds, discharge channels, storm water drains, and/or other storm water infrastructure would be installed to convey storm water from the composting operation. Unless designed and properly managed, composting operations could result in increased ponding or flooding, onsite or downstream.

Asphalt, roofs, sidewalks, concrete surfaces, and other surfaces prevent natural drainage and infiltration of storm water through soil. Surface water runoff has a greater volume and rate when the site is paved or otherwise covered by an impervious surface, because surface water infiltration rates are reduced or eliminated compared to undeveloped, unpaved areas. As a result, increases in impervious surfaces result in increased surface runoff volumes and peak flow rates. These impervious surfaces can produce considerable changes to downstream hydrology compared to pre-development conditions, exceeding existing or proposed drainage system capacities, and resulting in increased or exacerbated flooding on site or downstream. As such, the impact may have the potential to be significant.

Mitigation Measure 11.4: The following mitigation measures are included in the General Order:

- Require that areas used for receiving, processing, or storing feedstocks, additives, amendments, compost (active, curing, or final) be designed, operated and maintained to control and manage all run-on, runoff, and precipitation which falls onto or within the boundaries of these areas from a design storm event of 25-year, 24-hour at a minimum;
- Require that all areas used for receiving, processing, or storing feedstocks, additives, amendments, compost (active, curing, or final) must be protected from inundation by surface flows associated with a design storm event of 25-year, 24-hour at a minimum; and
- Require submittal of a Water and Wastewater Management Plan that details the design of the facility and how water and wastewater will be managed.

The effect of potential changes in drainage and flooding patterns would be minimized on a site-by-site basis by implementation and adherence to the NOI and accompanying technical report that would in turn ensure that the composting operation would minimize potential changes in storm water discharge rates and minimize onsite flooding. If the composting operation is designed, operated, and maintained in compliance with the General Order, this impact is expected to be less than significant with mitigation.

Impact 11.5. Compliance with the General Order at composting operations may have the potential to create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

During site grading and construction activities related to constructing new or improving existing surfaces, large areas of bare soil could be exposed to erosion by wind and water for extended periods of time. Bare soil surfaces are more likely to erode than vegetated areas due to the lack of dispersion, infiltration, and retention created by covering vegetation. Soil disturbance, excavation, cutting/filling, stockpiling, and grading activities could increase erosion and sedimentation to storm drains that empty to local surface waters.

For individual projects that would disturb less than one acre, the amount of disturbance required for the construction of surface improvements would be considered relatively minor, and current standard construction practices would be sufficient to reduce the potential for impacting receiving waters. Thus, these improvements that disturb less than one acre would have a less-

than significant impact on water quality. For projects that disturb more than one acre, these improvements may have the potential to have a significant impact on water quality.

Mitigation Measure 11.5. For projects that disturb more than one acre, the Discharger is required to comply with the Construction General Permit. Permit requirements include the following measures or their equivalent:

- Preparation of a site-specific Storm Water Pollution Prevention Plan;
- Preparation of hazardous material spill control and countermeasure programs;
- Sampling, monitoring, and compliance reporting for storm water runoff;
- Development and adherence to a Rain Event Action Plan;
- Adherence to numeric action levels and effluent limits for pH and turbidity;
- Monitoring of soil characteristics;
- Mandatory training under a specific curriculum;
- Mandatory implementation of best management practices, which could include, but would not be limited to:
    - Physical barriers to prevent erosion and sedimentation including setbacks and buffers, rooftop and impervious surface disconnection, rain gardens and cisterns, and other installations;
    - Construction and maintenance of sedimentation basins;
    - Limitations on construction work during storm events;
    - Use of swales, mechanical, or chemical means of storm water treatment during construction, including vegetated swales, bioretention cells, chemical treatments, and mechanical storm water filters; and
    - Implementation of spill control, sediment control, and pollution control plans and training.

Adherence to these and/or other similar management practices would be required as a condition of the permit, and would substantially reduce or prevent waterborne pollutants from entering natural waters. The specific set of management practices would be determined prior to initiation of construction activities of a project, and a schedule for implementation, as well as a series of monitoring and compliance measures would be developed in coordination with the permitting agency, to meet Clean Water Act standards.

The General Order requires control of storm water and liquids generated by compost process. Composting operations enrolled in the General Order are required to comply with the requirements of the General Order to contain storm water on-site, which include the following:

- Design, construct, and maintain areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost to control and manage run-on and run-off from a 25-year, 24-hour peak storm event;

- Protect areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost from surface flows associated with a 25-year, 24-hour peak storm event from inundation by surface flow;
- Design and operate the storm water detention pond, containment berm, and drainage conveyance systems to contain a 25-year, 24-hour peak storm event at a minimum;
- Require low permeability drainage ditches for Tier II facilities.

Mitigation measures listed above are expected to minimize additional sources of polluted runoff which would exceed the capacity of existing or planned storm water drainage systems; therefore, this impact is expected to be less than significant with mitigation.

Impact 11.6. Compliance with the General Order at composting operations may have the potential to otherwise substantially degrade water quality.

Site grading and construction activities related to modifying or constructing new composting operations to comply with the General Order have the potential to degrade the quality of surface water, including adjacent streams, lakes, and wetlands, through surface runoff of pollutants from the receiving, processing, and post-processing operations. The materials being processed could contain high levels of nutrients, organic matter, salts, sediment, and trash. Data collected from Regional Water Boards and compiled from literature reviews is provided in Appendix J. Other potential water quality pollutants may also be present in small quantities, including heavy metals or hydrocarbons. Potential mechanisms of contamination from pollutants include the following:

- During rainfall events or accidental over-application of process water, surface flow rates could exceed the capacity of the runoff control system resulting in pollutants entering surface water in violation of the General Order.
- Accidents could occur during transport of the materials being processed resulting in discharge to surface water.
- Detention ponds may overflow if rainfall events occur that exceed the design capacity resulting in overflow of wastewater entering surface water in violation of the General Order.

In California, environmental conditions that could lead to surface water runoff are primarily present in areas with many surface streams and other water bodies. Areas of high winter rainfall, such as the north and central coastal regions and interior northern California, have the greatest potential for rainfall intensities that could exceed the capacity of runoff control facilities. Seasonal wetlands are present throughout the Central Valley and coastal plains, and in these areas careful consideration would be required in selecting locations for composting operations. Accidents related to the handling of the material might also result in discharge of wastes to surface waters, but this event would not be expected with sufficient frequency or probability to warrant specific mitigation measures.

Composting for treatment of materials under the General Order has the potential to degrade groundwater quality from wastewater generated from the receiving, processing, and post-processing operations, if not property managed. The materials being processed could contain

high levels of nutrients, organic matter, salts, sediment, and fugitive trash. Other potential water quality pollutants may also be present in small quantities, including heavy metals or hydrocarbons. Data collected from Regional Water Boards and compiled from literature reviews is provided in Appendix J. Studies have indicated that composting high nutrient materials on coarse-textured soils (e.g. sands, loamy sands, sandy loams, gravel) where there are no barriers to soil-water movement can create elevated nitrates in shallow groundwater (Kennedy/Jenks, 2007). Potential mechanisms of contamination from pollutants include the following:

- Ponding of wastewater (i.e. process water, contaminated non-process water, leachate) on the working surface.
- Maintaining wastewater within a detention pond.
- Ponding of wastewater within drainage ditches or courses.

Therefore, the impact to water quality has the potential to be significant.

Mitigation Measure 11.6.

The General Order contains requirements and prohibitions as listed in Mitigation Measure 11.1, 11.3, 11.4, and 11.5. If appropriately implemented to comply with the General Order, these requirements are expected to effectively to mitigate these impacts to less than significant.

Impact 11.7. Compliance with the General Order at composting operations is not expected to 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.

Many areas of California are prone to flooding, especially low-lying portions of the Central Valley, the Sacramento-San Joaquin Delta, the Russian River Watershed, low-lying coastal areas without sufficient protection from surf and/or storms, desert washes located in California's desert areas, and additional areas where levees, dams, storm water containment, and other flood containment infrastructure is not sufficient to protect housing and other facilities. Even areas protected by levees are susceptible to flooding in the event of high-intensity storms of long duration.

FEMA provides information on flood hazard and frequency for cities and counties on its Flood Insurance Rate Maps. FEMA identifies designated zones to indicate flood hazard potential. Existing operations or proposed new operations could be located in areas that have been identified as subject to 100-year floods.

As discussed in Chapter 14, the General Order is not expected to impact housing or population, and therefore is unlikely to place housing within a flood hazard area. Therefore, impact from compliance with the General Order with regard to housing in flood hazard areas is anticipated to be less than significant.

Mitigation Measure 11.7. None required.

Impact 11.8. Compliance with the General Order at composting operations may have the potential to place within a 100-year flood hazard area structures which would impede or redirect flood flows.

Many areas of California are prone to flooding, especially low-lying portions of the Central Valley, the Sacramento-San Joaquin Delta, the Russian River Watershed, low-lying coastal areas without sufficient protection from surf and/or storms, desert washes located in California's desert areas. Additional flood hazards exist in areas where levees, dams, storm water containment, and other flood containment infrastructure is not sufficient to protect housing and other facilities. Even areas protected by levees may be susceptible to flooding in the event of high-intensity storms of long duration.

FEMA provides information on flood hazard and frequency for cities and counties on its Flood Insurance Rate Maps. FEMA identifies designated zones to indicate flood hazard potential. Existing operations or proposed new operations could be located in areas that have been identified as subject to 100-year floods.

The General Order requires composting operations to manage wastewater using options such as detention ponds, storage tanks, or treatment facilities. Compliance responses such as grading of pads, construction of ponds, or installation of storm drainage features at existing composting operations are expected to be contained within the composting operation site. Compliance with the General Order is unlikely to result in expanding the footprint of an existing or new composting facility to the extent that it would enter a flood hazard area.

Given the widespread extent of potential flooding hazards in many areas of California, the risk of flooding may not be completely unavoidable.

This impact has the potential to be significant for existing composting operations located within 100-year flood hazard areas. These impacts may be reduced or minimized by mitigation measures, beyond the authority of the State Water Board.

Mitigation Measure 11.8. Potential impacts from flooding may be reduced by the following actions:

- Identify the location of FEMA 100-year flood zones with respect to the composting operation, as required in the General Order.
- Locate modifications outside FEMA 100-year flood zones. Avoid expansion into FEMA-defined 100-year flood areas.
- For existing composting operations within 100-year flood zones:
    - Design modifications to withstand the effects of flooding using such features as elevated working surfaces and foundations, and site protection such as levees or other protective features.
    - Manage on-site drainage.

The State Water Board does not have the local land use authority to approve modifications to existing or new composting operations, and does not have the authority to impose mitigation measures as described above. Even with mitigation, modification of existing or new composting operations located within 100-year flood zones may have the potential to exacerbate the effects

of 100-year flood conditions. Consequently, the impact of the General Order at composting operations within 100-year flood zones may have the potential to be significant and unavoidable.

Impact 11.9. Compliance with the General Order at composting operations may have the potential to 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.

The General Order provides the option for a discharger to manage the wastewater using detention ponds. Depending on the size of the facility and local climate conditions, the detention ponds can be very large. In some cases, the ponds may trigger state and federal dam safety laws. In these cases, facilities would need to obtain approvals from California DWR. Division engineers and engineering geologists review and approve plans and specifications for the design of dams and oversee their construction to ensure compliance with the approved plans and specifications. Reviews include site geology, seismic setting, site investigations, construction material evaluation, dam stability, hydrology, hydraulics, and structural review of appurtenant structures. This impact may have the potential to be significant.

Mitigation Measure 11.9. Examples of recognized and accepted mitigation measures routinely required by regulatory agencies include:

- Conduct a field investigation to identify geologic hazards that could adversely affect the project, to characterize the engineering properties of available earth and rock construction materials, and to characterize the strength and permeability of the dam, spillway, and outlet foundations. A typical field investigation program includes understanding the geology of the site through geologic mapping, air photo analysis, test pits, and borings. The engineering properties of embankment and foundation soils are generally evaluated by sampling and laboratory testing, and field testing such as in-place density, penetration resistance, and permeability testing. Geophysical techniques, such as seismic refraction and shear wave velocity testing are sometimes used. Core drilling and water pressure testing may be required for rock foundations. A phased investigation is often the most effective way to evaluate the geologic conditions and engineering properties of a site. Since each site and project is unique, exploration plans should be submitted to California DWR Division of Safety of Dams beforehand for review.
- A dam shall be designed and constructed to meet current industry standards and California DWR Division of Safety of Dam's rules and regulations to minimize or avoid instability of the dam and its foundation. These features may include, but are not limited to the following:
    - Perform consolidation grouting across the dam raise footprint to stiffen shallow rock layers. Prior to placement of leveling concrete, zones of localized poor quality rock will be excavated and these localized excavations filled with dental concrete;
    - Install a seepage/leakage control and drainage system to reduce seepage through the dam foundation;
    - Construct a spillway;

- Design the outlet works system in accordance with Division of Safety of Dams requirements regarding evacuation of the reservoir in the event of a dam safety emergency;
- Incorporate slope stability measures such as rock bolts or mechanically stabilized earth walls.

The State Water Board does not have authority to require implementation of mitigation that could reduce this impact to a less than significant level. The ability to require such measures is under the purview of the California DWR Division of Safety of Dams. Because the State Water Board is not responsible for implementation of project-specific mitigation, and the analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable.

Impact 11.10. Compliance with the General Order at composting operations may have the potential to create a significant risk of inundation by seiche, tsunami, or mudflow.

Tsunami, seiche, and mudflow hazards are natural responses to events such as earthquakes, prolonged rainy periods, or strong winds; the modification of new or existing composting operations does not increase the likelihood of natural events. Tsunami, seiche, and mudflow hazards are discussed in Chapter 9, Geology and Mineral Resources.

Ground shaking associated with seismic events may cause secondary geologic hazards such as tsunamis. The California Geological Survey has developed tsunami inundation maps that delineate areas with significant risk of tsunami inundation. http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/Pages/Statewide_Maps.aspx.

Several existing composting operations are located near coastal regions, and may be within tsunami inundation zones. Modifications to existing or new composting operations to comply with the General Order are not expected to create a new significant risk of tsunami inundation.

As noted in Impact 11.9, some composting operations may construct large detention structures such as ponds to manage wastewater, or berms to manage drainage. Large ponds such as those discussed in Impact 11.9 may have the potential to develop small seiche waves during a seismic event or a strong wind storm. Failure or collapse of wastewater retention structures during a strong seismic event may have the potential to result in localized flooding and/or debris flows with the potential to cause property damage or injury.

Many of these structures are designed to withstand the effects of seismic events or other natural conditions, as part of the permitting process. However, it is speculative to determine what specific resources would be affected, quantify the extent of the impact, or draw conclusions regarding the significance of possible impacts. Therefore, impacts related to tsunamis, seiches, or mudflow could potentially be significant.

Mitigation Measure 11.10. Examples of practices that may be implemented to avoid and/or minimize impacts related to seiche, tsunami, and mudflow hazards include:

- Conduct a site-specific investigation that includes identification of local conditions such as tsunami inundation zones, and off-site landslide/mudslide hazards.
- Design modifications to withstand impacts of tsunami inundation, seiche waves, or mudslides.
- Design containment structures such as ponds to reduce potential for seiche waves.
- Design and construct modifications to existing or new composting operations in compliance with state and local seismic and wind design regulations.
- Develop an appropriate response plan to address the effects of a large earthquake event (i.e., magnitude 5.0 or greater within 50 miles of the project site), or strong wind event.

The State Water Board does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that environmental impacts related to tsunamis, seiches, and mudflows may be unavoidable.

Impact 11.11. New composting operations, unrelated to the General Order, may have the potential to violate any water quality standards or waste discharge requirements; 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; 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; 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; create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; otherwise substantially degrade water quality; 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; place within a 100-year flood hazard area structures which would impede or redirect flood flows; 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.

New composting operations may be constructed and located anywhere within the state, consistent with local land use requirements. The State Water Board cannot speculate on how many or where new composting operations will be constructed.. It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific impacts to hydrology and water quality can be fully analyzed and project

specific mitigation measures can be properly identified. Impacts resulting from development of new compost facilities, unrelated to the General Order, may be significant.

Mitigation Measure 11.11. *Anticipated mitigation measures that can be implemented by other regulatory agencies may consist of measures similar to those identified in Mitigation Measures 11.3., 11.4., 11.5., 11.6., 11.8., 11.9., and 11.10.*

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts.

Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant impacts resulting from new composting operations, unrelated to the General Order, may be unavoidable.

12. LAND USE PLANNING AND RECREATION

This chapter describes the existing land use planning structure in California and analyzes potential impacts that may occur from compliance with the General Order.

12.1. ENVIRONMENTAL SETTING

The manner in which physical landscapes are used or developed is commonly referred to as land use. Public agencies are the primary entities that determine types of land use changes that can occur for specific purposes within their authority. Land uses decisions are typically made by local governments in California. In incorporated areas, land use decisions are typically made by the city. In unincorporated areas, land use decisions are typically made by the county. Sometimes other agencies, such as the California Coastal Commission, State Lands Commission, or federal land management agencies also make land use decisions.

Generally, state law establishes the framework for local planning procedures, which local governments follow in adopting their own set of land use policies and regulations in response to the unique issues they face. In California, the State Planning and Zoning Law (Gov. Code, § 65000 et seq.) provides most of the legal framework local governments must follow in land use planning. Regulatory tools provided by the California Planning and Zoning Law include the following:

- **General Plan –** the general plan is a city or county's basic planning document. It provides the blueprint for development regarding the location of housing, business, industry, road, parks, and other land uses, protection of the public from noise and other environmental hazards, and conservation of natural resources. State law requires general plans to include the following seven "elements": land use, circulation, housing, conservation, open-space, noise, and safety. At the same time, each jurisdiction is permitted to adopt additional elements covering subjects of particular interest to that jurisdiction, such as recreation, public facilities, or economic development. The legislative body of each city (the city council) and each county (the board of supervisors) adopts zoning, subdivision and other ordinances to regulate land uses and carry out the policies of the general plan. Specific plans, zoning ordinances, subdivisions, public works projects, and development agreements must be consistent with the general plan.
- **Specific Plan –** the specific plan is a step below the general plan in the land use approval hierarchy and is used to implement the general plan in particular geographic areas. Specific plans describe allowable land uses, identify open space, and detail the availability of facilities and financing for a portion of the community. Specific plans must be consistent with the general plan. Zoning ordinances, subdivisions, public works projects, and development agreements must be consistent with the specific plan.
- **Subdivisions –** In general, land cannot be divided in California without local government approval. Dividing land for sale, lease or financing is regulated by local ordinances based on the state Subdivision Map Act (Gov. Code, § 66410 et seq.). The primary goals of the Subdivision Map Act are: (a) to encourage orderly community development by providing for the regulation and control of the design and improvements of the subdivision with a proper consideration of its relation to adjoining areas; (b) to ensure that the areas within the

subdivision that are dedicated for public purposes will be properly improved by the subdivider so that they will not become an undue burden on the community; and (c) to protect the public and individual transferees from fraud and exploitation. (61 Ops.Cal.Atty.Gen. 299, 301 (1978); 77 Ops.Cal.Atty.Gen. 185 (1994).)

- **Zoning –** A zoning ordinance is local law that spells out the immediate, allowable uses for each piece of property within the community. Zoning must comply with the general plan. Zoning ordinances group various types of land uses into general categories or "zones," such as single-family residential, commercial, industrial, and agricultural. Each piece of property in the community is assigned a zone listing the kinds of uses that will be allowed on that land and setting standards, such as minimum lot size and maximum building height.

12.2. ENVIRONMENTAL ANALYSIS

12.2.1. Approach and Methods

The following evaluation of land use, planning, and recreation impacts was prepared by considering applicable regulations and guidelines, and typical construction activities and operations that would be attributable to compliance with the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential significant impacts to land use, planning, and recreation takes into consideration the questions in Appendix G of the CEQA Guidelines and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will examine these individual projects to determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific studies that could include further modeling or analysis of these particular land use, planning, and recreation issues on a project-by-project basis.

12.2.2. Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would have a significant effect on land use, planning, or recreation if it would:

- Physically divide an established community;
- 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; or

- Conflict with any applicable habitat conservation plan or natural community conservation plan.
- 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.
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

12.2.3 Impacts and Mitigation Measures

Impact 12.1. Compliance with the General Order at composting operations is not expected to physically divide an established community.

Existing and new composting operation may construct or modify pads, detention ponds and/or wastewater treatment systems in response to the General Order. These modifications may have the potential to expand an existing or planned footprint of the composting site. However, compliance with the General Order is not expected to substantially alter the magnitude of these effects to the extent of dividing a community.

General Plan land use designations and zoning ordinances vary and a degree of latitude must be acknowledged with respect to determining consistency within different communities. The actions envisioned as compliance responses are generally consistent with business practices and activities normally allowed in industrial or agricultural land uses and are not expected to introduce land use or community plan compatibility conflicts.

For any new development, including composting operations, site-specific land-use issues are common and tend to be resolved on a case-by-case basis. It is anticipated that new construction at existing composting operations would be designed to be consistent with applicable land use policies and regulations. Moreover, it is reasonably foreseeable that new composting operations would require additional site-specific CEQA review that would address land use and siting issues. It is anticipated that appropriate land use permits from local jurisdictions would be secured prior to construction of new composting operations or modification of existing composting operations.

Consequently, the potential impact of physically dividing an established community as a result of compliance with the General Order is expected to be less than significant.

Mitigation Measure 12.1. None required. The following actions may further reduce potential impacts:

- Secure appropriate land use permits from local jurisdictions prior to construction of new or modification of existing composting operations;
- Address potential issues such as excessive light, dust, or noise from equipment operations through conditional use permits or zoning ordinances;

- Implement site-specific land-use mitigation measures including limiting hours of operation, incorporating fencing or vegetation barriers, and enclosure of structures.

Impact 12.2. Compliance with the General Order is not expected to 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.

For the reasons stated in Impact 12.1, compliance with the General Order at composting operations is expected to have a less than significant impact.

Mitigation Measure 12.2. None required. See Mitigation Measure 12.1 above.

Impact 12.3. Compliance with the General Order at composting operations is not expected to conflict with an applicable habitat conservation plan or natural community conservation plan.

For the reasons stated in Impact 12.1, compliance with the General Order at composting operations is expected to have a less than significant impact.

Mitigation Measure 12.3. None required. See Mitigation Measure 12.1 above.

Impact 12.4. Compliance with the General Order at composting operations is not expected to 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.

Compliance responses to the General Order at new and existing composting operations are not expected to result in a substantial increase in employment, and correspondingly, would not result in a substantial increase in population and associated demand for recreational facilities in existing neighborhoods. It can reasonably be expected that employees at composting operations would choose to reside in established communities and would use existing parks and recreational facilities. Operational changes due to the General Order may involve additional employees to operate a wastewater handling and treatment system or addition of contracted employees to monitor ponds or groundwater protection systems. Additional employees are anticipated to range from 1 to 5 people and do not represent a significant increase in the number of employees. Therefore, compliance responses at composting operations are not anticipated to increase demand for or use of recreational facilities. Potential impacts to existing neighborhood and regional parks or other recreational facilities are considered less than significant.

Mitigation Measure 12.4. None required. See Mitigation Measure 12.1.

Impact 12.5. Compliance with the General Order at composting operations is not expected to include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Compliance responses to the General Order are not expected to induce significant expansion of new or existing composting operations. Depending on the size of the operation, compliance responses to the General Order may involve the addition of 1 to 5 employees. This is not expected to result in a substantial increase in population and associated demand for recreational facilities in existing neighborhoods. Additionally, it can reasonably be expected that employees at composting operations would choose to reside in established communities providing recreational facilities or opportunities. Therefore, compliance with the General Order is not expected to require the construction or expansion of recreational facilities. Potential impacts to the construction or expansion of recreational facilities are considered less than significant.

Mitigation Measure 12.5. None required. See Mitigation Measure 12.1.

Impact 12.6. Development of new composting operations, unrelated to the General Order, may have the potential to physically divide an established community; 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; conflict with an applicable habitat conservation plan or natural community conservation plan; 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; or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

The development of new composting operations, unrelated to the General Order, could require a conditional use permit or zoning variance to address site-specific issues. Such site-specific land use issues are common, and tend to be resolved on a case-by-case basis. It is anticipated that new composting operations would be designed to be consistent with applicable land use policies and regulations and habitat conservation plans or natural community conservation plans. It is anticipated that appropriate land use permits from local jurisdictions would be secured prior to beginning operations.

The development of new composting operations, unrelated to the General Order, is not expected to induce new growth. Composting operations provide service for existing communities and cannot operate independently from the established communities from which they receive compostable materials. It can reasonably be expected that employees at new composting operations would choose to reside in these established communities and use existing parks and recreational facilities. Therefore, the development of new composting operations, unrelated to the General Order, would not be expected to require the construction or expansion of recreational facilities or increase the use of existing recreational facilities.

It is expected that new composting operations, unrelated to the General Order would have minimal impacts to land use and recreation resources. Therefore, potential land use, planning, and recreation impacts due to the construction of new composting operations are considered less than significant.

Mitigation Measure 12.6. *None required. Recognized practices that may further reduce impacts related to land use planning and recreation at new composting operations, unrelated to the General Order are listed in Mitigation Measure 12.1.*

13. NOISE

This chapter describes existing noise conditions in California and analyzes potential impacts that may occur from compliance with the General Order.

13.1. ENVIRONMENTAL SETTING

Acoustic Fundamentals

Acoustics is the scientific study that evaluates perception, propagation, absorption, and reflection of sound waves. Sound is a mechanical form of radiant energy, transmitted by a pressure wave through a solid, liquid, or gaseous medium. Sound that is loud, disagreeable, unexpected, or unwanted is generally defined as noise; consequently, the perception of sound is subjective in nature, and can vary substantially from person to person.

A sound wave is initiated in a medium by a vibrating object (e.g., vocal chords, the string of a guitar, the diaphragm of a radio speaker). The wave consists of minute variations in pressure, oscillating above and below the ambient atmospheric pressure. The number of pressure variation cycles occurring per second is referred to as the frequency of the sound wave and is expressed in hertz.

Directly measuring sound pressure fluctuations would require the use of a very large and cumbersome range of numbers. To avoid this and have a more useable numbering system, the decibel (dB) scale was introduced. A sound level expressed in decibels is the logarithmic ratio of two like pressure quantities, with one pressure quantity being a reference sound pressure. For sound pressure in air, the standard reference quantity is generally considered to be 20 micropascals, which directly corresponds to the threshold of human hearing. The use of the decibel is a convenient way to handle the million-fold range of sound pressures to which the human ear is sensitive. A decibel is logarithmic; it does not follow normal algebraic methods and cannot be directly added. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). A sound level increase of 10 dB corresponds to 10 times the acoustical energy, and an increase of 20 dB equates to a 100-fold increase in acoustical energy.

The loudness of sound perceived by the human ear depends primarily on the overall sound pressure level and frequency content of the sound source. The human ear is not equally sensitive to loudness at all frequencies in the audible spectrum. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. The standard weighting networks are identified as A through E. There is a strong correlation between the way humans perceive sound and A-weighted sound levels (dBA). For this reason, the dBA can be used to predict community response to noise from the environment, including noise from transportation and stationary sources. Sound levels expressed as dB in this section are A-weighted sound levels, unless noted otherwise.

Noise can be generated by a number of sources, including mobile sources (transportation noise sources) such as automobiles, trucks, and airplanes and stationary sources (non-transportation noise sources) such as construction sites, machinery, and commercial and industrial operations. As acoustic energy spreads through the atmosphere from the source to the receiver, noise

levels attenuate (decrease) depending on ground absorption characteristics, atmospheric conditions, and the presence of physical barriers (walls, building façades, berms). Noise generated from mobile sources generally attenuate at a rate of 4.5 dB per doubling of distance. Stationary noise sources spread with more spherical dispersion patterns that attenuate at a rate of 6 to 7.5 dB per doubling of distance.

Atmospheric conditions such as wind speed, turbulence, temperature gradients, and humidity may additionally alter the propagation of noise and affect levels at a receiver. Furthermore, the presence of a large object (e.g., barrier, topographic features, and intervening building façades) between the source and the receptor can provide significant attenuation of noise levels at the receiver. The amount of noise level reduction or “shielding” provided by a barrier primarily depends on the size of the barrier, the location of the barrier in relation to the source and receivers, and the frequency spectra of the noise. Natural barriers such as berms, hills, or dense woods, and human-made features such as buildings and walls may be used as noise barriers.

Noise Descriptors

The intensity of environmental noise fluctuates over time, and several different descriptors of time-averaged noise levels are used. The selection of a proper noise descriptor for a specific source depends on the spatial and temporal distribution, duration, and fluctuation of both the noise source and the environment. The noise descriptors most often used to describe environmental noise are defined below.

- Leq : the equivalent sound level is used to describe noise over a specified period, typically one hour, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same period (i.e., the average noise exposure level for the given time period).
- Lmax : the instantaneous maximum noise level for a specified time
- L50 : the noise level equaled or exceeded 50 percent of the specified time. The L50 represents the median sound level
- L90 : the noise level equaled or exceeded 90 percent of the specified time. The L90 is used to represent the background sound level
- Ldn : 24-hour day-night Leq with a 10-dB “penalty” applied during nighttime noise-sensitive hours, 10:00 PM and 7:00 AM
- CNEL: similar to the Ldn, the Community Noise Equivalent Level is an additional 5-dB “penalty” for the noise sensitive hours between 7:00 PM and 10:00 PM, which is typically reserved for relaxation, conversation, reading and watching television

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the Leq descriptor listed above. The Leq is the foundation of the composite noise descriptors such as Ldn and CNEL, as defined above, and shows very good correlation with community response to noise.

Noise Effects

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
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories.; workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of 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 previously existing 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 (Caltrans, 2009):

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable 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. The human ear perceives sound in a non-linear fashion hence the decibel scale was developed. 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.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles)

attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 2009).

Existing Noise Environment

The existing noise environment is primarily influenced by transportation noise from vehicle traffic on the roadway systems (e.g., highways, freeways, primary arterials, and major local streets) and non-transportation noise from commercial and industrial operations. Other noise sources that contribute to the existing noise environment include passenger and freight on-line railroad operations and ground rapid transit systems; commercial, general aviation, heliport, and military airport operations (e.g., jet engine test stands, ground facilities and maintenance) and overflights; and to a much lesser extent construction sites, schools (e.g., play fields), residential and recreational areas (e.g., landscape maintenance activities, dogs barking, people talking), agricultural activities, and others. With regards to composting operations, existing noise conditions vary depending on location, but are typically characterized as noisy urban industrial areas including such noise sources as stationary machinery, transportation (e.g., surface vehicles, heavy-duty diesel trucks, construction equipment), and other industrial-related activities.

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are also generally considered sensitive to increases in exterior noise levels. Places of worship and transit lodging, and other places where low interior noise levels are essential are also considered noise-sensitive.

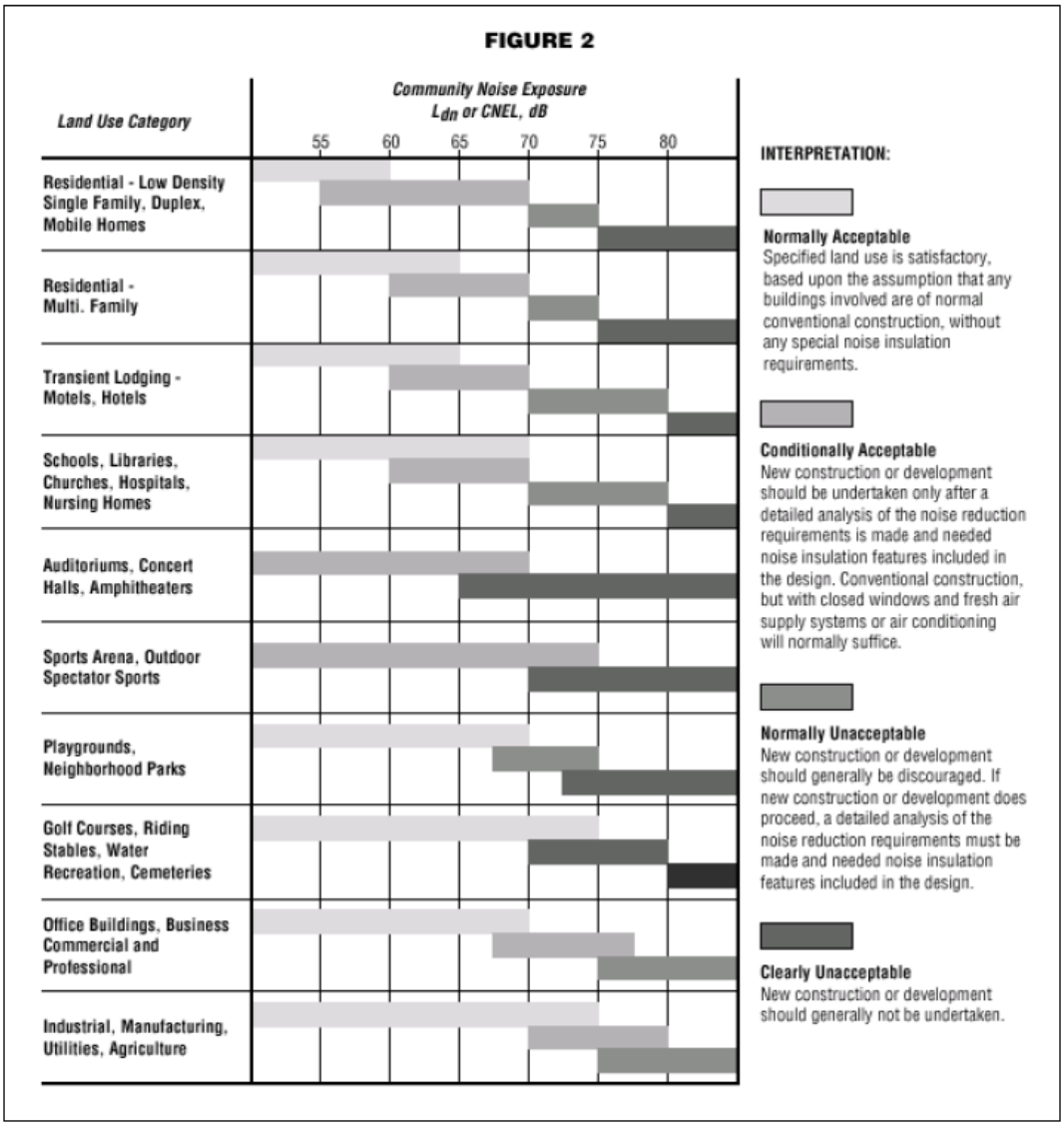


Figure 13-1 Land Use Compatibility for Community Noise Environment

13.2. ENVIRONMENTAL ANALYSIS

13.2.1. Approach and Methods

The following evaluation of noise-related impacts was prepared by considering applicable regulations and guidelines, and typical construction activities and operations that would be attributable to compliance with the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential significant impacts related to noise takes into consideration the questions in Appendix G of the CEQA Guidelines and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific noise-related studies that could include further modeling or analysis of these particular noise impacts on a project-by-project basis.

13.2.2. Thresholds of Significance

An impact related to noise is considered significant if it would result in any of the following issues adapted from Appendix G of the CEQA Guidelines:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general or noise ordinance, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- 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, the project would expose people residing or working in the project area to excessive noise levels.
- For a project within the vicinity of a private airstrip, the project would expose people residing or working in the project area to excessive noise levels.

13.2.3. Impacts and Mitigation Measures

Impact 13.1. Compliance with the General Order at composting operations may have the potential to result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Construction noise levels from the installation of pads, ponds, or monitoring networks would fluctuate depending on the particular type, number, size, and duration of usage for the varying equipment. Construction noise generated is typically limited to daylight hours. The effects of construction noise largely depend on the type of construction activities occurring on any given

day, noise levels generated by those activities, distances to noise sensitive receptors, and the existing ambient noise environment in the receptor's vicinity.

Construction generally occurs in several discrete stages, each phase requiring a specific complement of equipment with varying equipment type, quantity, and intensity. These variations in the operational characteristics of the equipment change the effect they have on the noise environment of the project site and in the surrounding community for the duration of the construction process.

To assess noise levels associated with the various equipment types and operations, construction equipment can be considered to operate in two modes, mobile and stationary. Mobile equipment sources move around a construction site performing tasks in a recurring manner (e.g., loaders, graders, dozers). Stationary equipment operates in a given location for an extended period to perform continuous or periodic operations. Operational characteristics of heavy construction equipment are additionally typified by short periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions.

Additionally when construction-related noise levels are being evaluated, activities that occur during the more noise-sensitive evening and nighttime hours are of increased concern. Because exterior ambient noise levels typically decrease during the late evening and nighttime hours as traffic volumes and commercial activities decrease, construction activities performed during these more noise-sensitive periods of the day can result in increased annoyance and potential sleep disruption for occupants of nearby residential uses.

The site preparation phase typically generates the most substantial noise levels because of the on-site equipment associated with grading, compacting, and excavation, which uses the noisiest types of construction equipment. Site preparation equipment and activities include backhoes, bulldozers, loaders, and excavation equipment (e.g., excavators and scrapers). Erection of large structural elements and mechanical systems could require the use of a crane for placement and assembly tasks, which may also generate noise levels. Although a detailed construction equipment list is not currently available, based on this project type it is expected that the primary sources of noise would include backhoes, bulldozers, and excavators. Noise emission levels from typical types of construction equipment are shown in Table 13-1.

Figure 13-2 Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 ft from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Dozer	85
Generator	81
Grader	85
Loader	85
Pump	76
Scraper	89
Truck	88

Source: FTA, 2006

Based on the information provided in Table 13.1 and accounting for typical usage factors of individual pieces of equipment and activity types, on-site construction could result in hourly average noise levels of 87 dBA Leq at 50 feet and maximum noise levels of 90 dBA Lmax at 50 feet from the simultaneous operation of heavy-duty equipment and blasting activities. Based on these and general attenuation rates, exterior noise levels at noise-sensitive receptors located within thousands of feet from project sites could exceed typical standards (e.g., 50/60 dBA Leq/Lmax during the daytime hours and 40/50 dBA Leq/Lmax during the nighttime hours).

Additionally, construction activities may result in varying degrees of temporary groundborne noise and vibration, depending on the specific construction equipment used and activities involved. Similar to the above discussion, although a detailed construction equipment list is not currently available, based on this project type it is expected that the primary sources of groundborne vibration and noise would include bulldozers and trucks. According to Federal Transit Administration (FTA), levels associated with the use of a large bulldozer and trucks are 0.089 and 0.076 inches per second (in/sec) peak particle velocity (PPV) (87 and 86 vibration decibels (VdB)) at 25 feet, respectively, as shown in Table 13.2. With respect to the prevention of structural damage, construction-related activities would not exceed recommended levels (e.g., 0.2 in/sec PPV). However, based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, bulldozing and truck activities could exceed recommended levels with respect to the prevention of human disturbance (e.g., 80 VdB) within 275 feet.

Table 13-1 Representative Groundborne Noise and Vibration Levels for Construction Equipment

Equipment	PPV at 25 feet (in/sec)[1]	Approximate Lv, (VdB) at 25 feet[2]
Blasting		109
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

[1] Where PPV is the peak particle velocity.

[2] Where Lv is the root mean square velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.

Source: FTA 2006

Thus, implementation of the General Order could result in projects that generate short-term construction noise (and vibration) levels in excess of applicable standards or that result in a substantial increase in ambient levels at nearby sensitive receptors. As a result, this impact would be potentially significant.

For new composting operations, compliance with the General Order would not substantially add to the duration of construction activities and construction related noises and vibrations in excess of applicable standards or that result in a substantial increase in ambient levels at nearby sensitive receptors.

Operational Impacts

Water aeration may be required in operation wastewater detention ponds to prevent anoxic conditions from forming. Aeration can be achieved through the infusion of air into the bottom of ponds or by surface agitation from a fountain or spray-like device to allow oxygen exchange at the surface and the release of noxious gasses such as carbon dioxide, methane, or hydrogen sulfide.

Dissolved oxygen is a major contributor to water quality because oxygen breathing aerobic bacteria decompose organic matter. When oxygen concentrations become low, anoxic conditions may develop which can decrease the ability of the water body to support beneficial microbes.

Pond aeration can be achieved by various means including:

- Fountains - fountains consist of an electric motor that power a rotating impeller that pumps water from the top few feet of the water and expels it into the air;
- Paddlewheel aerators - transfer oxygen from the air to the pond, and are most often used in aquaculture (rearing aquatic animals or cultivating aquatic plants for food). Electrically powered paddles churn the water, and transfer oxygen through air-water contact;

- Floating Surface Aerators - floating surface aerators operate in a similar manner to fountains, but do not offer the same aesthetic appearance. Floating aerators extract water from the top few feet of the pond and use air-water contact to transfer oxygen. Instead of propelling water into the air, these aerators disrupt the water surface. Floating surface aerators are also powered by on-shore electricity;
- Jet Aeration - Subsurface aeration can be accomplished using jet aerators, which aspirate air by means of the Venturi principle, and inject the air into the water;
- Bubble Aeration - bubble aeration is an efficient way to transfer oxygen to a pond. An on-shore compressor pumps air through a hose connected to underwater diffusers.

Each of these methods uses an electric motor to power pumps, impellers, or compressors, and when properly installed, operated, and maintained generally produce noise levels less than 54 dBA at 30 feet (Forever Green, 2013). Extrapolation of this noise level to a distance of ½ mile using an attenuation rate of 7.5 dBA for each doubling of distance yields a value of 6 dBA. As a result, this impact would be less than significant.

Mitigation Measure 13.1

Recognized and accepted measures routinely required by agencies or implemented as normal business practice to minimize noise impacts include:

- Comply with local plans, policies, and ordinances regarding acceptable noise and vibration levels;
- Ensure noise-generating construction activities (including truck deliveries, rock drilling and blasting) are limited to the least noise-sensitive times of the day (e.g., weekdays during the daytime hours) for projects near sensitive receptors;
- Consider use of noise barriers, such as berms, to limit ambient noise at property lines, especially where sensitive receptors may be present;
- Ensure all project equipment has sound-control devices no less effective than those provided on the original equipment;
- All construction equipment used shall be adequately muffled and maintained;
- Consider use of battery powered forklifts and other facility vehicles;
- Ensure all stationary construction equipment (i.e., compressors and generators) is located as far as practicable from nearby sensitive receptors or shielded;
- Properly maintain mufflers, brakes and all loose items on construction and operational-related vehicles to minimize noise and ensure safe operations. Keep truck operations to the quietest operating speeds. Advise about downshifting and vehicle operations in sensitive communities to keep truck noise to a minimum;
- Use noise controls on standard construction equipment; shield impact tools;
- Consider use of flashing lights instead of audible back-up alarms on mobile equipment;
- Install mufflers on air coolers and exhaust stacks of all diesel and gas-driven engines;

- Equip all emergency pressure relief valves and steam blow-down lines with silencers to limit noise levels;
- Contain operations within buildings or other types of effective noise enclosures;
- Employ engineering controls, including sound-insulated equipment and control rooms, to reduce the average noise level in normal work areas.

State Water Board does not have authority to require implementation of mitigation that could reduce this impact to a less than significant level. This authority is under the purview of others, such as the local permitting authority. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable.

Impact 13.2. Compliance with the General Order at composting operations may have the potential to result in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

For the reasons stated in Impact 13.1, compliance with the General Order at composting operations may have the potential to cause significant and unavoidable environmental impacts.

Mitigation Measure 13.2. See Mitigation Measure 13.1.

Impact 13.3. Compliance with the General Order at composting operations may have the potential to result in substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

For the reasons stated in Impact 13.1, compliance with the General Order at composting operations may have the potential to cause significant and unavoidable environmental impacts.

Mitigation Measure 13.3. See Mitigation Measure 13.1.

Impact 13.4. Compliance with the General Order at composting operations may have the potential to result in substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

For the reasons stated in Impact 13.1, compliance with the General Order at composting operations may have the potential to cause significant and unavoidable environmental impacts.

Mitigation Measure 13.4. See Mitigation Measure 13.1.

Impact 13.5. Compliance with the General Order at composting operations may have the potential to expose people residing or working in the project area to excessive noise levels (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).

For the reasons stated in Impact 13.1, compliance with the General Order at composting operations may have the potential to cause significant and unavoidable environmental impacts.

Mitigation Measure 13.5. See Mitigation Measure 13.1.

Impact 13.6. Compliance with the General Order at composting operations may have the potential to expose people residing or working in the project area to excessive noise levels (for a project located within the vicinity of a private airstrip).

For the reasons stated in Impact 13.1, compliance with the General Order at composting operations may have the potential to cause significant and unavoidable impacts.

Mitigation Measure 13.6. See Mitigation Measure 13.1.

Impact 13.7. Development of new composting operations, unrelated to the General Order, may have the potential to exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies; exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels; substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; expose people residing or working in the project area to excessive noise levels (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); or expose people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip).

New composting operations may be constructed and located anywhere within the state, consistent with local land use restrictions. The State Water Board cannot speculate on how many new composting operations will be constructed. It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project specific noise related impacts can be fully analyzed and project specific mitigation measures can be properly identified. It is further anticipated that compliance responses would be constructed consistent with local zoning ordinances establishing design guidelines such as minimum setbacks, noise restrictions, height requirements, maximum density, and/or landscaping requirements. Appendix E includes a list of CEQA documents reviewed and a summary of impacts and mitigations provided by individual facilities.

Generally, construction activities related to development of new composting operations, especially new large scale commercial operations, may consist of construction of large composting operations pads or buildings. Construction of the composting operations pads or buildings may be similar in process to those described in Impact 13.1, and may require heavy equipment such as bulldozers, scrapers, earthmovers, compactors, graders, augers, excavators, loaders, dump-trucks, and water trucks. Depending on equipment used, type of features and structures, and scale of operation, a new composting operation, unrelated to the General Order, is likely to result in substantially more noise-related disturbance, compared to construction activities related to the General Order. Additionally, duration of earthwork activities for construction of new compost operations may be longer than construction activities required for compliance with the General Order.

Consequently, impacts related to noise, resulting from development of new compost operations, unrelated to the General Order, may be significant.

Mitigation Measure 13.7. *Recognized and accepted measures that may reduce noise impacts at new composting operations, unrelated to the General Order are discussed in Mitigation Measure 13.1.*

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts to noise resulting from development and operation of new composting operations, unrelated to the General Order, may be significant and unavoidable.

14. POPULATION AND HOUSING

This chapter describes existing population and housing conditions in California and analyzes potential impacts that may occur from compliance with the General Order.

14.1. ENVIRONMENTAL SETTING

Population

According to the California Department of Finance (DOF) 2012 Census data, the population of California in 2012 was approximately 37,668,804 (DOF, 2013). According to the California DOF, California population grew by 0.8 percent in 2012 from 2011, with San Francisco Bay area leading as the fastest growing region. The City of Los Angeles is California's largest city with a population of 3,863,839 followed by San Diego with 1,326,238 (DOF, 2013).

Housing

Housing units, households, and vacancy rates for California are shown in Table 14-1. Data were derived from the California DOF 2012 estimates.

Table 14-1 California Housing Profile

Housing Units	Value
Total	13,740,488
Single Detached	7,993,199
Single Attached	969,193
Two to Four	1,114,311
Five Plus	3,105,021
Mobile Homes	558,764
Occupied	12,633,495
Vacancy Rate	8.1%
Persons per Household	2.92

14.2. ENVIRONMENTAL ANALYSIS

14.2.1. Approach and Methods

The following evaluation of population and housing impacts was prepared by considering applicable regulations and guidelines, and typical construction activities and operations that would be attributable to compliance with the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting

operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis takes into consideration the questions and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order, and a summary of possible impacts from development of new composting operations, that are unrelated to the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, the lead agency will examine these individual projects to determine whether their construction and operational effects were fully analyzed in the EIR. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific studies that could include further modeling or analysis of these population and housing impacts on a project-by-project basis.

14.2.2. Thresholds of Significance

An impact related to population and housing is considered significant if it would result in any of the following issues adapted from Appendix G of the CEQA Guidelines:

- 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);
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

14.2.3. Impacts and Mitigation Measures

Impact 14.1: Compliance with the General Order at composting operations is not expected to 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).

Modifications to y existing composting operations or construction of new composting operations to comply with the General Order is expected to require small crews (estimated to be 5-10 people), and demand for these crews is expected to be temporary (6-12 months per project). Therefore, it would be anticipated that the need for a substantial number of construction workers to migrate to a project area would not occur and that a sufficient construction employment base would likely be available. Further, minimal new additional personnel would be needed to operate the facilities depending on size. Appendix E, incorporated by reference, summarizes impacts from several new composting operations proposed within California. These operations, new or improved, were anticipated to have less than significant impacts related to population growth. Therefore, implementation of the General Order would result in less than significant impacts related to substantial population growth.

Mitigation Measure 14.1. None required.

Impact 14.2. Compliance with the General Order at composting operations is not expected to displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

For the reasons stated in Impact 14.1, compliance with the General Order at composting operations is expected to have less than significant impact.

Mitigation Measure 14.2. None required.

Impact 14.3. Compliance with the General Order at composting operations is not expected to displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

For the reasons stated in Impact 14.1, compliance with the General Order at composting operations is expected to have less than significant impact.

Mitigation Measure 14.3. None required.

Impact 14.4. Development of new composting operations, unrelated to the General Order, is not expected to 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); displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

New composting operations may be constructed and located anywhere within the state. The State Water Board cannot speculate on how many new composting operations will be constructed in any particular area. It is reasonably foreseeable that a project specific CEQA evaluation will be required for each new composting operation, where project-specific impacts to housing and population can be fully analyzed and project specific mitigation measures can be properly identified.

Construction activities related to development of new composting operations, unrelated to the General Order may require more workers or have longer construction duration than estimated Impact 14.1. However, the duration of the impact is expected to be temporary not substantial enough to result in substantial population growth in an area either directly or indirectly. Therefore, the impact to housing and population from new composting operations, unrelated to the General Order is expected to be less than significant.

Mitigation Measure 14.4. *None required.*

15. PUBLIC SERVICES, UTILITIES, AND ENERGY

This chapter describes existing public services, utilities, and energy in California, and analyzes potential impacts that may occur from compliance with the General Order.

15.1. ENVIRONMENTAL SETTING

Public Services

Public services are provided for public use and benefit, and generally include fire and police protection, libraries, and other public-support functions. This section identifies existing services and infrastructure.

Police Protection

CHP provides police protection service on State and Interstate highways throughout California. CHP enforces the California Vehicle Traffic Code and other laws to prevent crime; manages traffic and emergency incidents; assists other public agencies with law enforcement duties; and provides protection to the public and infrastructure.

Local law enforcement service is also provided by local agencies (i.e., cities and counties) to prevent crime, respond to emergency incidents, and provide traffic enforcement on local roadways. Composting operations are located either in unincorporated county areas, which are generally served by county sheriff's departments, or within incorporated city limits, which are generally served by city police departments.

Composting operations generally rely on local law enforcement to assist with crimes such as vandalism or theft or rely on the CHP concerning shipments to and from the operation bringing in feedstock or sending out compost product.

Fire Protection and Emergency Response

Statewide fire protection and emergency response service is provided by CALFIRE. CALFIRE is an emergency response and resource protection department. CALFIRE protects lives, property, and natural resources from fire, responds to emergencies of all types, and protects and preserves timberlands, wild lands, and urban forests.

Local fire protection service is provided by local fire districts and/or local agencies (e.g., fire departments of cities and counties). In addition to providing fire response services, most fire agencies also provide emergency medical response services (i.e., ambulance services) within their service areas.

The primary emergency response personnel for composting operations include the site's health and safety officers and operations managers as the first line of defense to respond to accidents or medical emergencies as identified in a site emergency response plan. Safety officers and operations managers first assess the situation, and call upon CALFIRE and/or local fire departments when needed for additional fire protection and emergency response.

Utilities

Public utilities at composting operations generally include water, drainage, sewer, power (electricity and gas), and solid waste service.

Water Supply

Statewide principal water supply sources are regulated by the United States Bureau of Reclamation (USBR) and DWR. The USBR is a federal agency and is the largest wholesaler of water in the United States. USBR brings water to more than 31 million people, and provides one out of five Western farmers with irrigation water for 10 million acres of farmland that produce 60 percent of the nation's vegetables and 25 percent of its fruits and nuts. USBR is also the second largest producer of hydroelectric power in the western U.S. with 53 power plants (USBRa, 2013).

In California, water supply sources are managed by the Mid-Pacific Region and Lower Colorado Region. The Mid-Pacific Region is responsible for management of the Central Valley Project. The Central Valley Project is a system of 20 reservoirs and more than 500 miles of major canals and aqueducts that encompasses 35 counties. The project has a combined storage capacity of more than 11 million acre-feet of water. Deliveries by the project include providing an annual average of 5 million acre-feet of water for agriculture,600,000 acre-feet for municipal and industrial uses (enough to supply about 2.5 million people in one year) and water for wildlife refuges, and maintaining water quality in the Sacramento - San Joaquin Delta (USBRb, 2013).

The Lower Colorado Region of the USBR manages the Lower Colorado River and water resource projects and programs in Arizona, southern California, and southern Nevada. This Region serves as the water master for the last 688 miles of the Colorado River within the United States on behalf of the Secretary of the Interior. The USBR also maintains the Hoover, David and Parker Dams (USBRc, 2013).

DWR is a State agency responsible for managing and implementing the State Water Project. The State Water Project is a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants. It provides water supply for an estimated 25 million Californians and about 750,000 acres of farmland. The State Water Project, spanning more than 600 miles from Northern California to Southern California, includes 34 storage facilities, 20 pumping plants, five hydroelectric power plants, four pumping-generating plants, and approximately 700 miles of canals, tunnels, and pipelines (DWR, 2011).

Local water supply districts, special districts, and jurisdictions (e.g., cities and counties) manage and regulate the availability of water supplies and the treatment and delivery of water to individual projects. Depending on their location and the source of their supplies, these agencies may use groundwater, surface water through specific water entitlements, or surface water delivered through the Central Valley Project or State Water Project. In some remote areas not served by a water supply agency, individual developments may need to rely upon the underlying groundwater basin for their water supply. In these cases, the project would be required to secure a permit from the local land use authority and seek approval for development of the groundwater well(s).

Composting operations may receive water for the operations from state water supply sources, on-site groundwater wells, potable water, or reclaimed water. Water is critical to a composting operation to assist the decomposition that creates a stable finished compost product, as well as providing site-wide dust and odor control. Potable water and non-potable water within California are supplied by many purveyors. Public or quasi-public facilities in urban/developed areas typically receive water from a municipal system and may receive reclaimed water if it is

available. Public or quasi-public facilities located in urban transition areas may have on-site water facilities, such as groundwater wells if water infrastructure from a municipal system has not been extended to the site.

Sewer

The State Water Board is responsible for regulation of wastewater discharges to surface waters and groundwater via land discharge. The State Water Board and nine regional water quality control boards (collectively referred to as Water Boards) are responsible for development and enforcement of water quality objectives and implementation plans that protect beneficial uses of the federal and state waters. The Water Boards also administer water rights in California. The Regional Water Boards are responsible for issuing permits or other discharge requirements to individual wastewater dischargers and for ensuring that they are meeting the requirements of the permit through monitoring and other controls.

Municipal wastewater collection and treatment for developed and metropolitan areas is typically provided by local wastewater service districts or agencies that may or may not be operated by the local jurisdiction (e.g., city or county). These agencies are required to secure treatment and discharge permits for operation of a wastewater facility from the Regional Water Boards. Wastewater is typically collected from a specific development and conveyed through a series of large pipelines to the treatment facility, where it is treated to allowable levels and discharged to surface waters or the land.

In areas that are remote or not served by an individual wastewater service provider, developments would be required to install an individual septic tank or other on-site wastewater treatment system. These facilities would need to be approved by the local land use authority and the Regional Water Boards.

Composting operations that provide restrooms generally rely on a portable septic system, if located in rural or agricultural areas, or connected to a municipal sewer and wastewater treatment system if located in industrial or urban areas. Portable septic systems are typically serviced by portable restroom service providers.

Storm Water Drainage

Composting operations located in rural or agricultural areas generally manage storm water using above-grade ditches, earthen berms, vegetated swales, and sediment detention basins. Operations in urban areas typically use curb and gutter linked to a local jurisdiction’s storm drain system.

Power

The California Public Utilities Commission (CPUC) regulates privately owned electric and natural gas companies located within California. The CPUC's Energy Division develops and administers energy policy and programs and monitors compliance with the adopted regulations. In 2013, CPUC estimated 11.5 million electricity customers; 10.7 million natural gas customers; 32,698 miles of electricity transmission lines; 239,112 miles of electrical distribution lines; more than 200 electric generation units; and 103,000 miles of natural gas pipelines throughout the state (CPUC, 2013).

California has three major investor-owned electric utilities (Pacific Gas and Electric Company (PG&E), Southern California Edison, and San Diego Gas and Electric Company (SDG&E)) and four smaller electric utilities. Similar to the electric industry, California has three major and one smaller investor-owned natural gas utilities. Two of these gas utilities, PG&E and SDG&E, are combined electric and natural gas utilities; whereas, Southern California Gas Company is a stand-alone natural gas utility, although it is part of Sempra, which owns both SDG&E and Southern California Gas Company. Southwest Gas is a smaller gas utility that provides gas in the Lake Tahoe Basin and in parts of Southern California (CPUC, 2010).

Electricity at a composting operation is typically provided by a public utility or generated on-site using generators or solar photovoltaic panels. Natural gas is provided by a public utility or stored in tanks on-site and filled via truck. Composting operations typically require very little electricity for their office use. Most of the equipment runs on gasoline or diesel. Some operations do require more electricity if operating electrical heavy equipment (i.e. grinder or screens) to meet air emission standards.

Solid Waste

CalRecycle is responsible for regulating the operations of disposal and recycling of non-hazardous solid waste generated in California. CalRecycle develops and adopts regulations at the state level, which are implemented at the local level by Enforcement Agencies. California disposes roughly 30 million tons of discarded material each year in landfills. Nevertheless, more material—perhaps as high as 60 million tons annually—is diverted through recycling, composting, or otherwise flowing through California's recovered materials infrastructure (CalRecycle, 2013).

Solid and recycling waste management facilities are typically owned and operated by local government agencies or private companies in California. Facilities that manage solid waste include landfills, material recovery facilities, compostable material handling facilities, and transfer and processing facilities. According to CalRecycle's Facility Information Toolbox, there are 58 recycling markets, 115 disposal facilities, 741 intermediate processors, 3,743 transfer facilities, 296 organic materials management facilities, and 45 intermediate processers (CalRecycle, 2013). Information on specific solid waste facilities, operations, and disposal sites can be found by searching CalRecycle's SWIS database accessible at http://www.calrecycle.ca.gov/SWFacilities/Directory/Default.htm.

Composting operations generate solid waste from the business office, removing contaminants from the feedstock, and near the end of the process during final screening to remove contaminants from the final product. Solid waste is typically removed from the site and transported to a permitted landfill facility through a contract with local public or private waste haulers. When a compost operation is located at a landfill, disposal activities are typically handled by separate operations personnel that transport the solid waste from the compost operation to the landfill.

15.2. ENVIRONMENTAL ANALYSIS

15.2.1. Approach and Methods

The following evaluation of impacts to public services and utilities was prepared by considering applicable regulations and guidelines, and typical construction activities and operations that would be attributable to compliance with the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential significant impacts to public services and utilities takes into consideration the questions in Appendix G of the CEQA Guidelines and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific studies that could include further modeling or analysis of these particular public services and utilities on a project-by-project basis.

15.2.2. Thresholds of Significance

An impact related to public services and utilities is considered significant if it would result in any of the following issues adapted from Appendix G and Appendix F of the CEQA Guidelines:

- Result in substantial adverse physical impacts associated with the provision of, or the 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 fire protection, police protection, schools, parks or other public facilities;
- Exceed wastewater treatment requirements of the applicable Regional Water Board;
- Require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed;
- Result in a determination by the wastewater treatment provider 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;

- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs;
- Comply with federal, state, and local statutes and regulations related to solid waste;
- Require or result in the construction of new sources of energy supplies or additional energy infrastructure capacity, the construction of which could cause significant environmental effects;
- Conflict with applicable energy policies or standards.

15.2.3. Impacts and Mitigation Measures

Impact 15.1. Compliance with the General Order at composting operations is not expected to result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, parks or other public facilities.

Fire Protection and Emergency Response - Composting operations are currently required to adhere to building and fire codes adopted by the relevant local jurisdiction. The composting operation would require fire protection and emergency response services similar to businesses, such as infrequent calls for service due to fire or personnel emergency. Compost, while in the state of rapid decomposition, causes a rise in temperature of the feedstocks being processed which could lead to favorable conditions for combustion. Therefore, fire protection service may differ from other commercial operations. The General Order encourages composting approaches that avoid conditions favorable to combustion, as well as allows the discharger to store water generated by process or storm water that may be used for fire suppression. Therefore, compliance with the General Order at existing or new composting operations is not anticipated to increase demands for fire protection or emergency response.

Police Protection - Composting operations would require law enforcement services to a similar extent as other businesses, such as patrol services and infrequent calls for service. Compliance with the General Order does not present unique issues that would create significant demands on law enforcement services at existing or new operations.

Schools, Parks, and Other Public Facilities - Compliance with the General Order at composting operations is not expected to result in a substantial increase in employment, and correspondingly, would not result in a substantial increase in population and associated demand for schools, parks, and other public facilities in existing neighborhoods. Operational changes due to the General Order may involve additional employees to operate a wastewater handling and treatment system or addition of contracted employees to monitor ponds or groundwater protection systems. The number of additional employees is anticipated to range from 1 to 5 personnel, and would not represent a significant increase in population. As the General Order does not induce new growth; it follows that the General Order would not increase demands for schools, parks, and other public facilities.

It can reasonably be expected that employees at composting operations would choose to reside in established communities and use existing schools, parks, and other public facilities. The

development of new composting operations in compliance with the General Order is not expected to induce new growth in communities, therefore adverse impacts associated with demands for fire protection, emergency response, police protection, schools, parks or other public facilities are expected to be less than significant.

Mitigation Measure 15.1. None required.

Impact 15.2. Compliance with the General Order at composting operations may have the potential to exceed wastewater treatment requirements of the applicable Regional Water Board.

Wastewater can be generated at composting operations by the composting process, or result of precipitation that falls on compost. The quality of wastewater is dependent on a variety of factors including type of feedstocks, additives, amendments used, and climate.

Wastewater generated by composting operations may contain contaminants that can degrade water quality. Most of the wastewater generated will be stored and contained in accordance with requirements of the General Order. However, it is possible that under some circumstances excess wastewater will be produced. That wastewater may be directly conveyed to a wastewater treatment system. These situations may result in exceedance of wastewater treatment requirements of the applicable Regional Water Board. If unmitigated, the impact to exceed wastewater treatment requirements of the applicable Regional Water Board may have the potential to be significant.

Mitigation Measure 15.2. The General Order requires containment and management of wastewater that is generated at composting operations. Requirements and prohibitions of the General Order (as listed in Mitigation Measure 11.1) are expected to minimize impacts related to management of wastewater. It is expected that waste water management systems will be consistent with requirements of the General Order and the Regional Water Board, including:

- Composting operations may elect to construct on-site wastewater management systems, which may include a treatment system for excess wastewater (for example, mechanical aerator in a detention pond). The on-site wastewater treatment systems will need to meet the wastewater treatment requirements of the applicable Regional Water Board;
- In lieu of constructing an on-site wastewater treatment, a discharger may transport wastewater to a wastewater treatment plant via trucks or sewer line;
    - Wastewater generated by composting operations may require pre-treatment prior to acceptance by a municipal wastewater treatment provider, to reduce biological oxygen demands or remove contaminants, for the wastewater treatment facility to meet the treatment/disposal requirements of the Regional Water Board.

If appropriately implemented to comply with the General Order, the measures listed above and in Mitigation Measure 11.1 are expected to effectively reduce impacts related to wastewater management to less than significant with mitigation.

Impact 15.3. Compliance with the General Order at composting operations may have the potential to require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Depending on the location, layout, and size of the facility, a composting operation may have the potential to generate large quantities of wastewater, particularly during the wet weather season. Although it is anticipated that most existing and new composting operations will elect to construct an on-site wastewater treatment facility, in response to the General Order, the General Order allows the option of transporting and disposing of wastewater at a municipal wastewater treatment plant, if the discharge meets the capacity and concentration limits as industrial wastewater for that facility. A municipal wastewater treatment facility has the discretion to accept or deny the discharge, in which case, the composting operation may choose another option such as developing a wastewater treatment facility for their uses alone resulting in new construction. New wastewater treatment facilities would be sized based on the individual project and would need to be evaluated further at the project level. Wastewater treatment facilities would be part of project plans submitted for local site plan review, and would be constructed to standards of the applicable jurisdiction and Regional Water Board.

The State Water Board is not able to predict which, if any operations would select this option; and it would be speculative to attempt to classify the impact and draw any conclusions related to a level of significance. Consequently, the EIR takes a conservative approach in its significance conclusion and discloses, for CEQA compliance purposes, the impacts may be potentially significant.

Mitigation Measure 15.3: The State Water Board does not have authority to approve construction of new or expansion of wastewater treatment facilities. That authority is within the purview of jurisdictions with local land use approval and/or permitting authority. Because authority to determine project-level impacts and to require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and analysis associated with this assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, impacts related to construction or expansion of water or wastewater treatment facilities could potentially be significant and unavoidable. Examples of measures that can be taken to potentially reduce impacts to wastewater treatment facilities include:

- Develop, design, and construct wastewater treatment systems consistent with the wastewater treatment requirements of the applicable Regional Water Board;
- Develop on-site systems (such as septic systems);
- Design and operate storm water detention pond, berm, drainage conveyance systems to contain 25-year, 24-hour peak storm event at a minimum;
- Maintain containment, control, monitoring structures and monitoring systems in good working order.

Impact 15.4. Compliance with the General Order at composting operations may have the potential to require or result in construction and operation of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Some facility structure modifications necessitated by implementation of the General Order may increase the area of impermeable surfaces (i.e., construction of compost pads), and increase the quantity of run-off water. Additional flow control or treatment may be needed by:

- Construction of new, lined storm water detention ponds;
- Expansion and/or lining existing storm water detention ponds;
- Treatment of contaminated storm water for discharge.

These structures would be designed and sized based on site-specific characteristics, including facility and drainage basin sizes, as well as local water budget factors (i.e., rainfall amounts, evapotranspiration rates, surface water and groundwater inflow, outflow, and through-flow). Specific pond design would be evaluated further at the project level.

Storm water facilities would be part of project plans submitted for local site plan review, and would be constructed to standards of the applicable jurisdiction and Regional Water Board. These facilities would be sized based on the individual project and would need to be evaluated further at the project level. The State Water Board is not able to predict which, if any operations would select this option; and it would be speculative to attempt to classify the impact and draw any conclusions related to a level of significance. Consequently, the EIR takes a conservative approach in its significance conclusion and discloses, for CEQA compliance purposes, the impacts may be potentially significant.

Mitigation Measure 15.4. The State Water Board does not have authority to approve construction of new or expansion of storm water treatment facilities or to impose mitigation measures other than those included as requirements of the General Order. That authority is within the purview of jurisdictions with local land use approval and/or permitting authority. Because authority to determine project-level impacts and to require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and analysis associated with this assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, impacts related to construction or expansion of storm water treatment facilities could potentially be significant and unavoidable. Examples of recognized and accepted measures that are routinely required by regulatory agencies include:

- Implementing best management practices such as use of silt fences, straw wattles, and sand bags during construction;
- Restrict construction activities to dry seasons;
- Implement dust control measures during construction;
- Build a construction entrance to prevent tracking by construction equipment entering roadways.

Impact 15.5. Compliance with the General Order at composting operations is expected to have sufficient water supplies available to serve the project from existing entitlements and resources.

Compliance with the General Order is not expected to require new or expanded water supply entitlements. Some facility structure modifications or construction required for General Order compliance may require additional water supply to accommodate construction processes and during startup. However, it is anticipated that these needs will be temporary. Therefore, compliance with the General Order by composting operations is expected to have a less than significant impact.

Mitigation Measure 15.5. None required.

Impact 15.6. Compliance with the General Order at composting operations may have the potential to result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

For the reasons stated in Impact 15.3, the EIR takes a conservative approach in its significance conclusion and discloses, for CEQA compliance purposes, the impacts may be potentially significant.

Mitigation Measure 15.6. See Mitigation Measure 15.3.

Impact 15.7. Compliance responses to the General Order at composting operations are expected to be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.

Composting reduces the overall volume of solid waste, decreasing the amount of waste that would normally be sent to landfills or other solid waste facilities, thereby conserving landfill space. In addition, discussion of possible indirect impacts due to closure of landfill facilities is speculative as described in Chapter 3.

Potential compliance responses that require modification of existing composting operations or construction of new composting operation may create some solid waste that require disposal in excess of baseline. This waste stream is anticipated to be temporary and minimal, containing construction waste or excess liner materials. It is assumed that excess aggregate or soil may be re-purposed by the composting operation itself, therefore not needing disposal. For these reasons, the impact is anticipated to be less than significant.

Compliance responses that require construction and operation of wastewater treatment facilities may create additional waste from packaging that are provided on a continuous basis. However, the amount of packaging is expected to be minimal given the cleaning of the feedstock required by operations. Therefore, the impact is anticipated to be less than significant.

Mitigation Measure 15.7. None required.

Impact 15.8. Compliance with the General Order at composting operations is expected to comply with federal, state, and local statutes and regulations related to solid waste.

Composting operations that enroll under the General Order are required to comply with federal, state, and local statutes and regulations related to solid waste. Therefore, the impact to federal, state, and local regulations is expected to be less than significant.

Mitigation Measure 15.8. None required.

Impact 15.9. Compliance with the General Order at composting operations may have the potential to require or result in the construction of new sources of energy supplies or additional energy infrastructure capacity, the construction of which could cause significant environmental effects.

Compliance with General Order may result in construction of new energy infrastructure at a specific project site depending on availability of power. New energy demand may be required for various wastewater handling processes as discussed below:

- If the composting operation has a detention pond, it should be managed to prevent a condition of nuisance. One option is to require that the dissolved oxygen level be maintain at 1.0 mg/l or greater to prevent the wastewater from going anaerobic thereby potentially creating an offensive odor. The most likely way to achieve this is to aerate the pond. Typical ways include using brush aerators, evaporators, or bubblers. All of these require power that may not be available at a site located in an agricultural or rural setting. Because aerators typically operate when needed depending on dissolved oxygen levels, solar or diesel power may not be useful. Therefore, dedicated power may be needed;
- If the discharger handles wastewater by pumping and storing in above-grade or underground tanks, they may require the use of diesel generators if dedicated power is not accessible nearby;
- If a discharger chooses to construct a new wastewater treatment system to treat and discharge, this may require constant demand of power. If power is not readily available, additional lines or transformers may be necessary for the discharger to meet the new power demand.

The development of new energy infrastructure or expansion of existing energy infrastructure onsite or off-site has the potential to cause significant impacts to biological, cultural, air quality, and/or other environmental resources. Typically, energy infrastructure can be located within existing easements or rights-of-way (i.e., public roads or utility easements). Specific impacts associated with off-site energy improvements would be evaluated at the project level during the local project review process.

Projects requiring off-site energy infrastructure must complete CEQA review for the energy improvements as a separate project. Some alternate infrastructure improvements may qualify as a categorical exemption pursuant to CEQA.

The State Water Board is not able to predict which operations would select this option; where they are located; the energy demand required by the facility, or the energy source that would be selected. Therefore, it is not possible to speculate what specific resources would be affected,

quantify the extent of the impact compared to baseline conditions, draw conclusions regarding the significance of possible impacts, or identify specific mitigation measures necessary to mitigate impacts to a less-than-significant level. Consequently, the EIR takes a conservative approach in its significance conclusion and discloses, for CEQA compliance purposes, the impacts may be potentially significant.

Mitigation Measure 15.9. The State Water Board does not have authority to approve modifications to existing or new composting operations. That authority is within the purview of jurisdictions with permitting authority. Because authority to determine project-level impacts and to require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and analysis associated with this assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, impacts related to energy supplies or energy infrastructure capacity could potentially be significant and unavoidable. An example of a recognized and accepted measure that may be implemented is:

- Use of diesel generators may be an option if the composting operation handles wastewater by pumping and storing in above-grade or underground tanks, or for pond aeration.

Impact 15.10. Compliance with the General Order at composting operations is not expected to conflict with applicable energy policies or standards.

Composting operations that enroll under the General Order are required to comply with federal, state, and local statutes and regulations related to applicable energy policies and standards. Therefore, impact to applicable energy policies or standards is less than significant.

Mitigation Measure 15.10. None required.

Impact 15.11. Development of new composting operations, unrelated to the General Order, may have the potential to: result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, parks or other public facilities; exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; 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; have sufficient water supplies available to serve the project from existing entitlements and resources, or need new or expanded entitlements; result in a determination by the wastewater treatment provider which 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 be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; comply with federal, state, and local statutes and regulations related to solid waste; require or

result in the construction of new sources of energy supplies or additional energy infrastructure capacity, the construction of which could cause significant environmental effects; and conflict with applicable energy policies or standards.

New composting operations may be constructed and located anywhere within the state, consistent with local land use restrictions. The State Water Board cannot speculate on how many new composting operations will be constructed. It is reasonably foreseeable that each new composting operation will be required to have a project specific CEQA evaluation, where availability of public utilities capacity and compliance with energy standards can be fully analyzed and project specific mitigation measures can be properly identified.

Generally, new composting operations, especially new large scale commercial operations located in undeveloped areas, may potentially demand a major portion of public utilities capacity (water, wastewater, storm drainage, energy), substantially more than what would be required for compliance with the General Order. Types of impacts from these demands may be similar to potentially significant impacts discussed in Impacts 15.3, 15.6 through 15.9.

Mitigation Measure 15.11. *The State Water Board does not have the authority to approve modifications to existing and new composting operations, and does not have the authority to impose mitigation measures. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts to public services, utilities, and energy resulting from construction of new composting operations, unrelated to the General Order may be unavoidable.*

16. TRANSPORTATION AND TRAFFIC

This chapter describes existing traffic and transportation conditions in California and analyzes whether possible changes in transportation and traffic may occur from compliance with the General Order.

16.1. ENVIRONMENTAL SETTING

Existing roadway systems generally consist of highways, freeways, arterials, local streets, and intersections/ramps. The existing average annual daily traffic (AADT) volumes on roadway segments that comprise these systems vary considerably (i.e., from hundreds to hundreds of thousands). The level of service (LOS), a scale used to determine the operating quality of a roadway segment or intersection based on volume-to-capacity ratio (V/C) or average delay, also vary from LOS A, the best and smoothest operating conditions, to LOS F, most congested operating conditions. Existing LOS designations and policies are typically determined by the local city or county transportation agencies.

Other roadway and traffic volume characteristics, such as roadway length, number of lanes and facility type (e.g., two-lane highway), right-of-way width and pavement width, terrain classification (e.g., flat), percent of heavy-duty truck traffic, and accident rates (e.g., number of accidents per million vehicle miles traveled) also vary substantially depending on location. In addition to roadway systems, circulation networks provide additional transportation opportunities, and include mass transit, airports, and non-motorized travel (e.g., pedestrian and bicycle paths).

The State of California has more than 50,000 miles of state highways (e.g., interstate highways, United States highways, and state routes), provides inter-city rail services, and permits more than 400 public-use airports and special-use hospital heliports (Caltrans, 2013). Caltrans Statewide Transportation Projects Inventory captures transportation projects of all modes (e.g., highways, bus, rail, airports, seaports, and bicycle and pedestrian) from Metropolitan Planning Organizations and Regional Transportation Agencies' regional transportation plans, and statewide modal plans.

The Statewide Transportation Projects Inventory also shows all the current highways, rail and transit, aviation, and goods movements in each Caltrans Districts, which can be accessed at http://www.dot.ca.gov/hq/tpp/californiainterregionalblueprint/.

16.2. ENVIRONMENTAL ANALYSIS

16.2.1. Approach and Methods

The following evaluation of transportation and traffic impacts was prepared by considering applicable regulations and guidelines, and typical construction activities and operations that would be attributable to compliance with the General Order. The assessment of potential impacts included review of documents, maps, and data; observation of existing composting operations; and consultation with persons currently involved with permitting or environmental documentation for composting operations.

This analysis of potential impacts related to transportation takes into consideration the questions and mandatory findings of significance as outlined in section 15065 of the CEQA Guidelines. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change due to implementation or compliance with the General Order, and a summary of possible impacts from development of new composting operations, unrelated to the General Order.

However, consistent with the CEQA Guidelines section 15168, as changes to individual composting operations are proposed, it is expected that there will be additional CEQA compliance necessary prior to project approval and the lead agency for the individual project will determine to what extent the analysis in this EIR will be relevant to the site-specific analysis. Future review of individual composting operations is likely to require additional site-specific CEQA review, including site specific studies that could include further modeling or analysis of these particular impacts related to traffic and transportation on a project-by-project basis.

16.2.2. Thresholds of Significance

An impact related to transportation is considered significant if it would result in any of the following issues adapted from Appendix G of the CEQA Guidelines:

- 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 and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- 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 agency for designated roads or highways;
- 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;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Additionally, the following screening criterion is recommended by the Institute of Transportation Engineers (1989) for assessing site specific effects of development projects that have the potential to create permanent traffic increases:

- Project-related traffic is considered significant if transporting wastewater or other materials to an offsite location would cause a substantial increase in traffic volumes, defined as the generation of 50 or more trips per hour.

  For construction projects that create temporary traffic increases, this criterion is considered conservative. However, this criterion is intended to assess the effect of a traffic mix

consisting primarily of automobiles and light trucks. To account for heavy trucks associated with the action, the threshold level would be reduced to 50 new peak-direction trips. Trips using private roads are not counted, because this type of travel activity would not affect state, county, or other public roadways

In lieu of other locally preferred thresholds, a traffic access/impact study should be conducted whenever a development will generate 100 or more added (new) peak direction trips to or from the site during the adjacent roadway's peak hours or the development's peak hours.

16.2.3. Impacts and Mitigation Measures

Impact 16.1. Compliance with the General Order at composting operations may have the potential to 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 and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

Management options to comply with the General Order include but are not limited to: monitoring wells, detention ponds, storage tanks, wastewater treatment systems, or storage and hauling wastewater to an off-site treatment plant.

Composting operations that implement use of monitoring wells, detention ponds, storage tanks, wastewater treatment systems would not be anticipated to have a significant impact on transportation or traffic. Operations that rely on storage and hauling wastewater to an off-site treatment facility may increase the number of vehicles entering and exiting the operation. Heaviest traffic would be expected to occur during the rainy seasons, when the potential to generate the wastewater is greatest.

Traffic analysis estimated potential traffic impacts from off-site waste water transport; the estimates assumed that the off-site waste water disposal option would most likely be used by smaller operations, such as those with a capacity of 25,000 cy or less, and that the greatest traffic would be generated during rainy seasons. The analysis indicates the potential traffic generated by off-site wastewater transport is significantly less than the Caltrans' threshold of 50 trips per hour, and would not result in substantial increase in traffic volumes on local roadways. Calculations to estimate waste water traffic impacts are provided in Appendix K.

However, improvements to existing composting operations such as construction of pad, pond, or drainage conveyance structures is anticipated to result in short-term construction traffic from worker commute and material delivery-related trips. The extent and duration of construction activity would depend on the particular type of improvement, size of operation, equipment used, and phase of construction. These variations would affect the amount of project-generated traffic for worker commute trips and material deliveries. Thus, depending on the amount of trip generation and the location of the composting operations, compliance with the General Order may have the potential to result in temporary conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system.

Therefore, transportation-related impacts during modification of existing composting operations or construction of new composting operations to comply with the General Order could be potentially significant.

Mitigation Measure 16.1. Recognized and accepted measures that are routinely required by regulatory agencies or implemented as normal practice to minimize traffic impacts may include:

- Implement a Construction Traffic Control Plan and a Traffic Management Plan;
- Coordinate with the local public transit administration so that bus routes or bus stops in work zones can be temporarily relocated;
- Minimize the number and length of access, internal, service and maintenance roads and use existing roads when feasible;
- To the extent possible schedule truck trips outside of peak commute hours to avoid adverse impacts on traffic flow;
- Use flaggers or warning signs to provide for safe ingress and egress to/from the project site. Identify road design requirements for any roads, and related road improvements;
- If new roads are necessary, prepare a road siting plan, and consult standards contained in federal, state, or local requirements. The plans should include design and construction protocols to ensure roads will meet the appropriate standards and be no larger than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles);
- Access roads should be constructed in locations that would avoid or minimize impacts to washes and stream crossings, follow natural contours and minimize side-hill cuts;
- Roads internal to a project site should be designed to minimize ground disturbance. Excessive grades on roads, road embankments, ditches, and drainages should be avoided, especially in areas with erodible soils.

The State Water Board does not have authority to require implementation of mitigation that could reduce this impact to a less than significant level. The ability to require such measures is under the purview of jurisdictions with local permitting authority. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that impacts may be potentially significant and unavoidable.

Impact 16.2. Compliance with the General Order at composting operations may have the potential to 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 agency for designated roads or highways.

For the reasons stated in Impact 16.1, transportation-related impacts during modification or construction of composting operations to comply with the General Order could be potentially significant.

Mitigation Measure 16.2. See Mitigation Measure 16.1.

Impact 16.3. Compliance with the General Order at composting operations may have the potential to 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.

Studies show that aircraft collisions with wildlife are a serious economic and public safety problem. Aircraft-wildlife strikes are the second leading causes of aviation-related fatalities. Modifications such as drainage improvements, detention ponds, and disposal operations have the potential to attract wildlife, because they offer ideal locations for water, feeding, reproduction, and escape. Composting operations might attract wildlife due to storage of food waste and odor generated by the operation.

Thus, composting operations near airports may have the potential to cause a significant impact to air traffic safety due to aircraft collisions with wildlife.

Mitigation Measure 16.3. Recognized and accepted measures that may be required by regulatory agencies or implemented as normal business practice to minimize air traffic impacts may include:

- Notify the FAA Regional office as early in the development process as possible;
- Avoid locating composting operations on or near airport property. If composting operations are to be located on or near airport property, FAA recommends that the airport operator monitor composting operations to ensure that steam or thermal rise does not affect air traffic in any way;
- Off-airport composting operations should follow the minimum distance required by FAA;
- Non-food waste such as leaves, lawn clippings, branches and twigs are not considered wildlife attractant.

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable.

Impact 16.4. Compliance with the General Order at composting operations is not expected to substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or uncompetitive uses (e.g. farm equipment).

Compliance with the General Order is unlikely to substantially increase hazards due to a design feature or uncompetitive uses. Roadway design features (e.g. sharp curves or dangerous intersections) or uncompetitive uses (e.g. farm equipment) are not likely to be affected by the General Order's requirements; therefore, impact from compliance with the General Order is expected to be less than significant.

Mitigation Measure 16.4. None required.

Impact 16.5. Compliance with the General Order at composting operations may have the potential to result in inadequate emergency access.

Improvements to or construction of pad, pond, or drainage conveyance structures would be anticipated to result in short-term construction traffic from worker commute and material delivery-related trips. The amount of construction activity would depend on the particular type or scale of operation, duration of usage for the varying equipment, and the phase of construction. These variations would affect the amount of project-generated traffic which may result in slow down of traffic and impede emergency access. It is anticipated that construction of emergency ingress and egress would be part of a Health and Safety plan submitted as part of the permitting process. However, the State Water Board does not have the authority to impose requirements on emergency access plans; therefore, impact from compliance with the General Order has the potential to be significant.

Mitigation Measure 16.5. Recognized measures that may be required by regulatory agencies or implemented as normal business practice to minimize traffic impacts include:

- Composting operations should have an approved emergency plan on site at all times, and the plan shall be updated as necessary;
- Provide advanced notification to administrators of local police and fire stations, and hospitals of the timing, location, and duration of construction activities;
- During construction, surrounding streets should be kept open, allowing adequate access for emergency vehicles.

The State Water Board does not have authority to require implementation of mitigation that could reduce this impact to a less than significant level. The ability to require such measures is under the purview of jurisdictions with local permitting authority. Consequently, the EIR takes a conservative approach in its significance conclusion and discloses, for CEQA compliance purposes, the significant impacts may be potentially unavoidable.

Impact 16.6. Compliance with the General Order at composting operations may have the potential to conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

For the reasons stated in Impact 16.1, this impact may be potentially significant.

Mitigation Measure 16.6. See Mitigation Measure 16.1.

Impact 16.7. Compliance with the General Order at composting operations may have the potential to create impacts to adjacent roadways.

For the reasons stated in Impact 16.1, this impact would be potentially significant.

Mitigation Measure 16.7. See Mitigation Measure 16.1.

Impact 16.8. Development of new composting operations, unrelated to General Order, may have the potential to cause 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 and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit; 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 agency for designated roads or highways; 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; substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); result in inadequate emergency access; or conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

For the reasons provided in discussions of Impacts 16.1 through 16.7, construction and operation activities at new composting operations, unrelated to the General Order, may have the potential to result in significant impacts to transportation and traffic.

Mitigation Measure 16.8. *See Mitigation Measures 16.1., 16.3., and 16.5.*

The State Water Board does not have the authority to approve new composting operations, and does not have the authority to impose mitigation measures as described above. Therefore, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce potentially significant impacts. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that potentially significant environmental impacts resulting from development of new composting operations may be unavoidable.

17. CUMULATIVE IMPACTS

This chapter describes the potential for the General Order to cause a considerable contribution to a cumulatively significant impact. CEQA Guidelines section 15130, subdivision (a) requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable," as defined in CEQA Guidelines section 15065, subdivision (c). Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts (CEQA Guidelines, § 15355). The fundamental purpose of this analysis is to ensure that potential environmental impacts of an individual project are not considered in isolation. Impacts that may be individually less than significant from a narrow project-scale perspective could pose potentially significant impacts when considered from a wider perspective, including impacts of other past, present, and probable future projects.

Discussion on cumulative impacts shall reflect the severity of impacts and likelihood of occurrence. (CEQA Guidelines, § 15130, subd. (b).) CEQA Guidelines note that the cumulative impacts discussion does not need to provide as much detail as is provided in the analysis of project-only impacts, and should be guided by standards of practicality and reasonableness. CEQA Guidelines section 15130, subdivision (b)(1) recommends use of a "list" or "projection" approach in the discussion of significant cumulative impacts to adequately address cumulative impacts.

17.1. APPROACH

The EIR discusses whether the General Order's incremental effect is cumulatively considerable and where that is the case, describes significant cumulative impacts of the project in combination with past, present, and probable future projects. Cumulative impact analysis must identify related projects through either a "list" or a "projection" approach, summarize effects of related projects, and contain a reasonable analysis of cumulative impacts and mitigation measures. Cumulative impacts from implementation of the General Order are discussed for this statewide analysis by analyzing possible projects that could cause impacts in combination with the General Order. These impacts may occur in relation to existing land use planning throughout the state from a program and project-level approach.

On the program level, impacts from other regulatory agencies proposing changes to their rules and regulations regarding composting operations are discussed. On the project level, it is not possible to provide an environmental analysis of individual probable future projects that could occur at the same time to cause impacts that would combine with impacts from the General Order. The cumulative impact analysis entails a general consideration of construction or other activities that may be occurring at the same time a specific composting operation is being constructed in compliance with the General Order.

As a frame of reference, potential cumulative impacts from implementation of a number of county, city, and municipal general plans were reviewed. Locations were selected to provide a cross-section of California regions, and included major urban areas as well as some smaller towns and rural counties throughout the state. These general plans are prepared to guide municipal growth and development, promote local business, maintain and expand infrastructure,

provide direction for funding decisions, and protect the local environment and human health. Potential cumulative impacts resulting from these general plans were analyzed in conjunction with EIRs prepared for each plan. The EIRs for 16 city, county, or municipality general plans were reviewed, including those for:

1) City of Los Angeles
2) County of Los Angeles
3) City of San Diego
4) City of Sacramento
5) City of Rancho Cordova
6) City of Santa Clarita
7) Imperial County
8) City of Santa Paula
9) Riverside County
10) City of Elk Grove
11) County of San Diego
12) City of Pinole
13) City of Irvine
14) City of Cypress
15) City of Corte Madera
16) City of Ione

17.2. PROGRAM LEVEL IMPACTS

The State Water Board currently has the following policies in development: Policy for Toxicity Assessment and Control (Toxics Policy); Water Quality Control Policy for Wetland Area Protection and Dredge or Fill Permitting (Wetlands Policy); Water Quality Control Plans for Ocean Waters of California and for the Inland Surface Water, Enclosed Bays, and Estuaries of California for Trash (Trash Amendments); Anti-Degradation Policy Application to Groundwater; and, a California Ocean Plan Amendment addressing desalination facilities and brine disposal (Desalination Amendment).

- The goals of the Toxics Policy include: (a) a new method to determine the toxicity of discharges, (b) statewide numeric objectives, and (c) further standardization of toxicity provisions for NPDES dischargers and facilities subject to WDRs and conditional waivers.
- The Wetlands Policy has the goal of developing: (a) a wetland definition that would reliably define the diverse array of California wetlands based on the United States Army Corps of Engineers' wetland delineation methods to the extent feasible, (b) a wetland regulatory mechanism based on the 404(b)(1) guidelines (40 C.F.R. §§ 230–233) that includes a watershed focus, and (c) an assessment method for collecting wetland data to monitor progress toward wetland protection and to evaluate program development.
- The Trash Amendments will reduce human-generated debris from entering streams, rivers, lakes, and the ocean. The proposed amendments will include five elements: (1) water quality objective, (2) prohibition of discharge, (3) implementation, (4) compliance schedule, and (5) monitoring.

- The Anti-degradation Policy regulates the disposal of wastes into the waters of the state and requires that the quality of existing high-quality water be maintained. Following stakeholder input State Water Board staff is developing a scoping document to improve the usefulness of the Anti-Degradation Policy as a tool for making informed decisions regarding discharges that affect groundwater.
- The Desalination Amendment has three components: (a) a narrative objective for salinity, (b) limits on impingement and entrainment from desalination intakes, and (c) an implementation policy. Specifically with regard to intake impacts, the Ocean Plan does not authorize flow augmentation for dilution purposes, and clarification of this existing constraint to the use of in-plant dilution will be included in the amendment.

The Regional Water Boards are in the process of developing a variety of Basin Plan amendments including TMDLs for different pollutants, as well as issuing various permits throughout the State. Examples include:

- Aquatic Ecosystem Restoration Policy (Region 1),
- Stream and Wetland Protection Policy (Region 2), TMDLs for Nitrogen Compounds and Orthophosphates in the Lower Salinas River Watershed (Region 3),
- Implementation Plans for the TMDLs for Metals in the Los Cerritos Channel and for Metals and Selenium in the San Gabriel River and Impaired Tributaries (Region 4),
- Central Valley Salinity Alternatives for Long-Term Sustainability (Region 5),
- Pesticide Prohibition Basin Plan Amendment (Region 6),
- Revise Indicator Bacteria for a 17-Mile Reach of the Coachella Valley Storm Water Channel (Region 7),
- Recreation Standards for Inland Fresh Surface Waters (Region 8), and
- Rainbow Creek Nitrogen and Phosphorus TMDLs (Region 9).

The goal of all of these actions is to protect and improve the quality of the State's waters. Implementation measures identified during development of these policies and basin plan amendments may have similar potential impacts as those identified here. As such, there may be a cumulative impact to certain resources depending on the location and timing of the implementation measures. Potential cumulative impacts are discussed further in the following section.

CalRecycle is also revising California Code of Regulations, titles 14 and 27 regarding compostable materials, transfer/processing, permit application form, and permit exemptions. Revisions contemplated include modifying the definition of "food waste;" establishing criteria for determining when use of compostable material is considered disposal; authorizing temporary storage above the current limit of 12,500 cy; developing a mechanism to address chronic odor complaints; defining how to recognize and respond to green waste contamination; considering new regulations for in-vessel composting; revising maximum concentrations of metals allowed in finished compost; adding exclusions; and revising administrative requirements for EAs. The goal of their actions is to protect human health and the environment. Implementation of these requirements may have similar impacts to air quality, hazards and hazardous materials, and transportation as the General Order. As such, there may be a cumulative impact depending on the location and timing of implementation.

17.3. PROJECT LEVEL IMPACTS

CEQA directs that the cumulative impact analysis include a list or projection of the past, present and reasonably foreseeable probable future projects that could occur within the project area that could cause impacts that would combine with those of the proposed project. Implementation of the General Order would occur throughout the entire state and it would be speculative to attempt to estimate the specific actions that could occur in and around the areas of implementation.

As discussed in Chapter 2, most composting operations appear to be located near population centers but rarely within urban areas. As such, it is reasonable to assume that modifications to existing composting operations or construction of new composting operations would most likely occur within urban-fringe or rural areas. The other types of projects that may occur in and around these areas include infrastructure maintenance, industrial development, and housing development projects. The impacts of these types of actions typically involve air quality, agriculture, biological, cultural, hazards, hydrology, water quality, noise, population, housing, public services, utilities, traffic and transportation associated with construction and long-term use. Depending on the timing of the implementation of these other projects, these impacts could combine with the potential impacts of the General Order.

The General Order does not constitute approval of any specific project, it merely defines measures a composting operation must implement to protect water quality. Each composting operation applying for a permit under the terms of the General Order will have to complete a full, site-specific CEQA analysis to determine if the operation will exceed cumulative levels of significance for each environmental resource area in its respective district. Implementation projects and activities related to other nearby projects, however, may result in cumulative effects of the following nature:

17.4. AESTHETICS

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to visual resources, degrade existing visual character of quality of the area, or create new sources of substantial light or glare depending on location relative to unique physical features, visibility of those features from public vantage points, and access to those vantage points.

Cumulative impacts may be significant, as indicated in EIRs prepared in support of general plans for the County and City of San Diego, City of Rancho Cordova, Imperial County, City of Santa Paula, Riverside County, City of Elk Grove, and City of Ione. According to the County of San Diego's General Plan Update EIR, projects located in the San Diego region would have the potential to result in a cumulative impact to scenic vistas if in combination they would result in the obstruction, interruption, or detraction from a scenic vista. These projects would have to comply with applicable regulations; however, these regulations may not be as strict or regularly enforced such as development projects in tribal lands like a new casino, concert venue, and theater. Therefore, implementation of responses to comply with the General Order may have the potential to contribute to significant and unavoidable cumulative impacts.

Mitigation Measure: Local agencies are generally responsible for adopting policies for conserving aesthetic resources and enforcing those policies in their area of authority. Recognized mitigation measures may include:

- Reduce land development pressure by assigning low density and intensity land uses to areas with aesthetic value.
- Require that residential subdivisions be planned to conserve open space and natural resources.
- Require that aesthetic features and open space networks be incorporated into development plans.
- Minimize disturbance of natural topography.
- Require new developments to place utilities underground.
- Restrict outdoor light and glare from development projects.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this aesthetics assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that aesthetic impacts resulting from modification of existing or development of new composting operations could be potentially significant and unavoidable.

17.5. AGRICULTURE AND FORESTRY

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to agricultural and forest lands.

Compliance with the General Order requires dischargers to manage wastewater generated by composting operations. Management options include, but are not limited to construction of new wastewater features (i.e., ponds), or expansion of existing features to meet requirements of the General Order. Such new features may necessitate expanding the operational footprint. If an existing composting operation is located in an area zoned for agricultural use or forest land, the General Order has the potential to result in conversion of such lands to construct wastewater management features. Several of the EIRs for municipal general plans (County and City of San Diego, City of Rancho Cordova, City of Santa Clarita, Riverside County, City of Santa Paula, and City of Ione) indicate that projected future population growth may lead to existing farmland and forests being converted to urban and other non-agricultural uses. Therefore, compliance with the General Order may have the potential to contribute to cumulatively significant and unavoidable impacts to agriculture and forest land.

Mitigation Measure: Projects with potential impacts to agriculture and forest land typically must undergo an evaluation by the local agency to determine the extent and nature of the impacts, and to require mitigation measures to minimize potentially significant conversion of agricultural

and forest land to non-agricultural and non-forest uses. Some community general plans also contain policies that relate to preservation of agricultural and forest lands, and guide decision making for projects that could result in impacts to these resources. These mitigation measures may include, but are not limited to, the local land use agency requiring land development plans to conserve open space and natural resources, protect agricultural operations, allow reductions in lot size for compatible development when tracts of existing historically agricultural land are preserved in conservation easements for continued agricultural use, and support acquisition or voluntary dedication of agriculture conservation easements and programs that preserve agricultural lands.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this agricultural and forest land assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that impacts to agricultural and forest lands resulting from modification of existing or development of new composting operations could be potentially significant and unavoidable.

17.6. AIR QUALITY AND GREENHOUSE GAS

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to air quality and greenhouse gas emissions.

Criteria Pollutant Emissions

Construction and operational emissions generated by composting operations could create cumulative impacts in air districts that are in non-attainment status with respect to state or federal ambient air quality standards, as discussed in Chapter 6. It is necessary to ensure that emissions from new sources do not negatively affect the region or its designation.

In addition, CalRecycle is in the process of drafting changes to California Code of Regulations, title 14, division 7, chapter 3, section 17868.3.1 to define the allowable amount of physical contaminants greater than 4 millimeters in compost destined for land application at 0.1 percent by weight. Existing regulations are tacit on limits for physical contaminants in compost, but do define the limit in green material as 1.0 percent by weight in section 17852(21). The new, lower limit may require compost facilities to employ more rigorous pre-processing and sorting to remove physical contaminants. These activities may be conducted using mechanized processes (i.e., trommels), which could increase operational emissions.

Additional sources of criteria pollutant emissions associated with composting operations would include any additional motorized equipment on-site for pre-processing and increased traffic on the local roadway network. Although composting operations would result in air pollutant emissions from these sources, operations would also divert organics from landfills. By doing so, there would be less activity at the landfill, such as potentially fewer pieces of off-road equipment and a potential decrease in the vehicle miles travelled for haul trucks.

Other land development projects, industrial projects, and the increase in air emissions resulting from activities associated with population growth would also contribute to an increase in air emissions. Individual air districts classified as nonattainment areas for state or federal ozone or federal PM10 ambient standards are required to prepare state implementation plans and air quality management plans showing how compliance with ambient standards will be achieved. The plans include policies to reduce air emissions from industrial operations, auto and truck exhaust, increases in population, and other activities that could result in increased air emissions. This cumulative impact is considered significant.

A composting operation would have to complete an individual CEQA analysis to determine if the operation will exceed the levels of significance in its respective district. Based on the previous discussions, an operation's emission of criteria pollutants could potentially have significant impacts on regional air quality standards. Therefore, compliance with the General Order may have the potential to contribute to cumulatively significant and unavoidable impacts to criteria pollutant emissions.

Mitigation Measure: Local air districts are required to review each new source under the New Source Review. This rule ensures that new sources located in non-attainment areas use BACT to mitigate emission rates. Each composting operation will have to go through this review process to ensure that cumulative impacts from the operation do not negatively affect air quality in the region. The State Water Board does not have authority to require implementation of mitigation related to new or modified facilities approved by local authorities. The ability to require such measures is within the purview of jurisdictions with local land use approval and/or permitting authority.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this emissions assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Even with mitigation, construction emissions could exceed local air district threshold levels of significance, depending on the magnitude of construction activities. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that air quality impacts resulting from development of new or modification of existing composting operations could be potentially significant and unavoidable.

Cumulative Greenhouse Gas Emissions

Local air districts can set GHG emission limits for composting operations. Each composting operation must complete a full CEQA analysis to determine if it will exceed the levels of significance in its respective district. Based on the previous discussions, GHG emissions have the potential to exceed significant impacts levels depending on the region and the size of the operation.

Mitigation Measures: Based on the previous analysis, if cumulative GHG emissions exceed the significance threshold in the corresponding air district, mitigation would be required. The following mitigation measures are potential measures that a composting operation could

implement to reduce GHG emissions. Local CEQA analysis would provide specific measures that composting operations could implement to reduce GHG emissions.

Local districts may require projects to meet GHG emissions requirements. As these vary depending on the air district, a list of possible mitigation options is provided below:

- Composting operations can use electric engines, if electricity is available at the site, to eliminate on-site GHG emissions from stationary engines that are required for water management and aeration.
- Composting operations can follow offset protocols to create carbon credits to balance emissions from stationary sources. Offset emissions would have to be real, verifiable, and permanent to qualify.
- Composting operations could fund local projects that result in GHG reductions and credit the carbon credits achieved to their operation.
- Composting operations could purchase available offset credits that were previously captured from another source and available for purchase in an approved carbon registry.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, this emissions assessment does not attempt to address project-specific details of mitigation. Therefore, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Even with mitigation, operational and construction GHG emissions could exceed local air district threshold levels of significance depending on the operation requirements. Consequently, the EIR takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that cumulative air quality impacts resulting from development of new or modification of existing composting operations could be potentially significant and unavoidable. However, with mitigation, air quality impacts from stationary engines are expected to be less than significant.

17.7. BIOLOGICAL RESOURCES

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to biological resources.

Cumulative impacts may be significant, as indicated in EIRs prepared in support of general plans for the City of Los Angeles, City and County of San Diego, City of Rancho Cordova, City of Santa Clarita, City of Santa Paula, Riverside County, and City of Ione. According to the City of Los Angeles Citywide General Plan Framework EIR, by closely controlling development within the City, potential growth may be pushed to other areas outside of Los Angeles. The redirection of growth to these areas, where protection of biological resources may be less important than growth, could result in the loss of habitat for plants and animals. While no single project may be responsible for the loss of biological resources, the cumulative effect of numerous small projects in natural open space will have a significant impact as the remaining habitat for plants and animals is fragmented and lost to piecemeal evaluation.

The degree of future impacts and applicability, feasibility, and success of future mitigation measures cannot be adequately known for each specific future project at this program level of analysis. Some modifications to existing composting operations or new construction associated with modification/expansion or new composting operation may occur on lands that are not currently disturbed. In these cases, development of new or expansion of composting operations could result in loss of special-status plant and wildlife species, or loss or disturbance of biologically unique or sensitive natural communities.

Therefore, implementation of responses to comply with the General Order may have the potential to contribute to significant and unavoidable cumulative impacts.

Mitigation Measure: The following are recognized practices routinely required to avoid and/or minimize impacts to biological resources:

- Proposed activities could qualify as a "project" under CEQA. The jurisdiction with primary permitting authority over a proposed action is the Lead Agency and required to review the proposed action for compliance with CEQA statutes.
- Preparation of a biological inventory of site resources by a qualified biologist prior to ground disturbance or construction. If protected species or their habitats are present, comply with applicable federal and state endangered species acts and regulations. Ensure that important fish or wildlife movement corridors or nursery sites are not impeded by project activities.
- Preparation of a wetland survey of onsite resources. Establish setbacks and prohibit disturbance of riparian habitats, streams, intermittent and ephemeral drainages, and other wetlands. Wetland delineation is required by section 303 (d) of the Clean Water Act administered by the USACE.
- Prohibit construction activities during the rainy season with requirements for seasonal weatherization and implementation of erosion prevention practices.
- Prohibit construction activities in the vicinity of raptor nests during nesting season or establish protective buffers and provide monitoring as needed to ensure that project activity does not cause an active nest to fail.
- Preparation of site design and development plans that avoid or minimize disturbance of habitat and wildlife resources, and prevents storm water discharge that could contribute to sedimentation and degradation of local waterways. Depending on disturbance size and location, a NPDES construction permit may be required from the State Water Board.
- Plant replacement trees and establish permanently protection suitable habitat at ratios considered acceptable to comply with "no net loss" requirements.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this biological resources assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that biological resources impacts resulting from modification of

existing or development of new composting operations could be potentially significant and unavoidable.

17.8. CULTURAL RESOURCES

Implementation of compliance resources, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to the area's cultural resources.

Cumulative impacts may be significant, as indicated in EIRs prepared in support of general plans for the City of Los Angeles, City and County of San Diego, Riverside County, City of Pinole, and City of Ione.

According to the City of Los Angeles Citywide General Plan Framework EIR, loss or disturbance of known or unknown archaeological sites or historical structures within the county is considered to be cumulatively significant. Compliance responses to the General Order could include land grading to improve existing surfaces or detention ponds, expanding existing pond capacity, constructing new detention ponds, or changing the wastewater handling system. It is also possible that incidental new structures, such as ancillary buildings, covered shelters, or onsite utility lines might be necessary to accommodate some improvements. Most existing composting operations are on sites that have been subjected to severe disturbance including grading, trenching, paving, and construction of roads and structures. Nonetheless, activities that require disturbance of soil, such as construction of ponds and buildings, trenching for drainage or utility lines, or grading have potential to adversely affect cultural resources that may exist in those areas. Therefore, implementation of responses to comply with the General Order may have the potential to contribute to significant and unavoidable cumulative impacts.

Mitigation Measures: The State Water Board does not have authority to require implementation of mitigation that could reduce this impact to a less than significant level. The ability to require such measures is under the purview of jurisdictions with local permitting authority. It is expected that project-specific impacts and mitigations would be identified during the environmental review by agencies with regulatory authority.

Recognized practices that are routinely required to avoid and/or minimize impacts to cultural resources include:

- Proposed activities could qualify as a "project" under CEQA. The jurisdiction with primary permitting authority over a proposed action is the Lead Agency and required to review the proposed action for compliance with CEQA statutes.
- A cultural resources site survey shall be performed by a qualified archaeologist or cultural specialist that conforms to the United States Secretary of Interior's Professional Qualifications Standards, as published in the Code of Federal Regulations, title 36, section 61.
- The State Historic Preservation Officer and federal lead agencies shall be contacted as appropriate for coordination of Nation-to-Nation consultations with the Native American Tribes.
- A qualified paleontological resources specialist shall be consulted to determine whether paleontological resources would likely be disturbed in a project area on the basis of the

sedimentary context of the area and a records search for past paleontological finds in the area. The assessment may suggest areas of high known potential for containing resources. If the assessment is inconclusive, a surface survey is recommended to determine the fossil resource potential and extent of the pertinent sedimentary units within the project site. If the site contains areas of high potential for significant paleontological resources and avoidance is not possible, prepare a paleontological resources management and mitigation plan.

- Consult established archaeological and historical records and conduct field survey the project site prior to construction. Survey records shall be fled with appropriate archaeological or historical data centers.
- Consult with local Native American representatives as appropriate to obtain local knowledge of the project vicinity.
- Prepare site development and grading plans that avoid disturbance of known cultural sites and/or documented sensitive areas. Project plans shall include appropriate measures to protect sensitive resources.
- Retain a qualified archaeologist or Native American representative to monitor site development activities, particularly grading and trenching. If artifacts are observed during construction, require that construction be halted until a qualified archaeologist has been consulted.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this cultural resources assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that cultural resources impacts resulting from modification of existing or development of new composting operations could be potentially significant and unavoidable.

17.9. GEOLOGY, SOILS, AND MINERAL RESOURCES

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to the area's geologic, soils, and mineral resources.

The General Order requires the discharger to construct site improvements such as low permeable pads beneath compost materials, monitoring wells, and wastewater management structures such as detention ponds, storage tanks, pipelines, or treatment facilities. These site improvements could be sited in areas underlain by unstable soils, including loose erodible soils, or potential expansive soils; or situated in areas known to contain one or more mineral resources that would be locally important or would be of value to residents of the state.

Cumulative impacts may be significant, as indicated in EIRs prepared in support of general plans for Riverside County and City of Ione. According to the City of Ione's General Plan Update Draft EIR, implementation of their General Plan and other project components in combination with other reasonably foreseeable development projects within the region could

result in significant loss of mineral resources in the region. Therefore, implementation of responses to comply with the General Order may have the potential to contribute to significant and unavoidable cumulative impacts.

Mitigation Measures: Recognized measures used by local agencies to manage impacts from geologic hazards, mitigate soil erosion and sedimentation, and potential impacts to mineral resources within their area of authority may include, but are not necessarily restricted to the following:

- Manage urban development in areas subject to seismic and geologic hazards.
- Minimize land disturbing activities (i.e., cutting and filling) and removal of natural vegetation in areas with steep slopes to reduce risk from fires, flood, mudslides, erosion, sedimentation, and landslides.
- Manage development in areas where recovery of mineral resources may be economically viable.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this aesthetics assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that geological, soils, and mineral resources impacts resulting from modification of existing or development of new composting operations could be potentially significant and unavoidable.

17.10. HAZARDS AND HAZARDOUS MATERIALS

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to hazard and hazardous materials.

The context for potential cumulative hazards and hazardous materials impacts is projects that could result in an increased risk of exposure due to a release of hazardous materials in the project area. The potential for cumulative projects to result in a release resulting in an increased risk of exposure and the project's contribution would be limited. Exposure to existing soil and groundwater contamination is generally site-specific and depends on past, present, and future uses and existing soil, sediment, and groundwater conditions. Any hazardous materials uncovered during construction activities would be managed consistent with applicable federal, State and local laws to limit exposure and clean up the contamination. In addition, the storage, handling and transport of hazardous materials are also regulated by federal, state and local regulatory agencies to limit risk of exposure.

The contribution of the project to cumulative risk of exposure would not be considerable. While construction and operational activities could result in accidental spills or leaks in the vicinity, the extent of the contamination is not likely to extend beyond the project site boundaries due to the type and limited quantities of hazardous materials likely to be used (for example, motor fuels,

hydraulic oils, paint, and lubricants). Furthermore, as identified above, composting operations that use, store and transport hazardous materials would be required to adhere to all applicable laws and regulations. Compliance with existing laws and regulations and mitigation measures established for composting operations would minimize the potential for harmful exposures to hazardous materials, aviation safety, hazards, and vector impacts.

In sum, construction and operation of composting operations in combination with other projects in the project area may create a significant hazard to the public or the environment through the routine transport, use, disposal or accidental release of hazardous materials, vector population growth, and fire hazards unless the activity complies with all applicable laws and regulation. Therefore, implementation of responses to comply with the General Order may have the potential to contribute to significant and unavoidable cumulative impacts.

Mitigation Measures: Local enforcement agencies routinely manage hazards and hazardous materials in their jurisdictions using the following measures:

- Ensure sites are investigated for the presence of hazardous materials and/or waste contamination before development, and that appropriate measures are taken to protect the health and safety of all users.
- Require property owners of known contaminated sites work with the EA to develop and implement plans to investigate and manage hazardous materials or contamination present at the site that may pose an adverse effect on human health or the environment.
- Provide household hazardous waste collection programs to encourage proper disposal of products containing hazardous materials or hazardous wastes.
- Restrict transport of hazardous materials to designated routes.
- Educate residents and businesses on how to reduce or eliminate use of hazardous materials, and encourage use of non-toxic equivalents.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this hazards and hazardous materials assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that significant environmental impacts from hazards or hazardous materials resulting from modification of existing or development of new composting operations could be potentially significant and unavoidable.

17.11. HYDROLOGY AND WATER QUALITY

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to hydrology and water quality.

The geographic scope of potential cumulative water quality impacts includes all of California. As discussed previously, many existing sources of surface water and groundwater have water

quality impairment. For example, groundwater in the Tulare Lake Basin has been degraded by salt loading through a combination of natural processes and human activities. Surface waters along the Sacramento River and the Sacramento-San Joaquin Delta have been substantially affected by urban-related point and nonpoint source discharges, including wastewater treatment effluents, industrial effluents, urban runoff, and agricultural runoff. Naturally intermittent water courses in metropolitan areas of southern California have become perennial streams, with dry season flows being comprised almost entirely of wastewater treatment effluent and summertime urban runoff.

On a cumulative basis, on-going activities, including waste management and energy production have the potential for additional cumulative degradation of surface water and groundwater. However, the operation of composting operations, as required by Mitigation Measures 11.6, would be prohibited from discharging into surface waters unless covered by a separate NPDES permit with effluent limitations to protect surface water quality. Mitigation Measures 11.2 through 11.7 would also provide for protection of water quality associated with discharges of wastes to land, detention ponds, and other facilities, as described previously. Adherence to mitigation measures proposed in the General Order would help to ensure that discharges from composting operations would not degrade water quality to the point that beneficial use would be affected. Therefore, implementation of responses to comply with the General Order is not expected to contribute to cumulatively significant impacts on water quality.

Cumulative impacts with regard to wastewater treatment capacity may be significant if a composting operation chooses to treat its wastewater by discharging it to the local sewer. Based on a review of General Plan EIRs, the following jurisdictions may have significant cumulative impacts to the wastewater conveyance and treatment system: City of San Diego, City of Sacramento, City of Rancho Cordova, City of Santa Clara, Imperial County, Riverside County, County of San Diego, City of Pinole, and City of Corte Madera. Any project that occurs in addition to other planned developments may result in an expansion of the jurisdiction's wastewater conveyance and treatment capacity to service the project's sewer needs in addition to the existing community. Therefore, implementation of responses to comply with the General Order may have the potential to contribute to significant and unavoidable cumulative impacts with regards to wastewater treatment capacity.

Mitigation Measure: Implement Mitigation Measures in Chapter 11.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this aesthetics assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that impacts to wastewater conveyance and treatment services resulting from modification of existing or development of new composting operations could be potentially significant and unavoidable.

17.12. LAND USE AND RECREATION

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to land use and recreation.

Compliance with the General Order requires composting operations to manage wastewater by implementing waste water management features such as ponds, tanks, or wastewater treatment systems. Such new features have the potential to expand the operational footprint of an existing or planned composting operation. Depending on the size and type of compliance response selected, operational changes that comply with the General Order may involve an estimated 1 to 5 additional employees at an existing or new composting operation. This is not expected to result in a substantial increase in local population and associated demand for recreational facilities in existing communities.

It is anticipated that compliance responses would be developed in accordance with general plans designating land use, and local zoning ordinances establishing design guidelines such as minimum setbacks. It is also anticipated that local permitting authorities would require new composting operations to be consistent with applicable land use policies and regulations, habitat conservation plans, or natural community conservation plans.

Modified or newly constructed composting operations are anticipated to have less than significant cumulative impacts related to land use and recreation.

Mitigation Measure: None required.

17.13. NOISE

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to existing ambient noise conditions.

The scope of cumulative construction noise impacts is the addition of construction noise from composting operations combined with construction noise from other projects within the vicinity of the project area. If construction of the project coincides with and affects the same sensitive receptors as construction noise from other projects, this cumulative impact could be significant. Therefore, implementation of responses to comply with the General Order may have the potential to contribute to significant and unavoidable cumulative impacts.

Mitigation Measure: The following recognized mitigation measures could be used to reduce cumulative project impacts related to excessive noise levels:

- Incorporate buffers or other noise reduction measures into the siting and design of projects located next to sensitive noise-receptors
- Require acoustical studies to identify inappropriate noise levels where development may directly result in noise sensitive land uses being subject to noise levels above applicable noise standards
- Require projects that increase average daily traffic to not increase cumulative traffic noise to off-site noise sensitive land uses beyond acceptable levels

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this noise assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that noise and/or vibration impacts resulting from modification of existing or development of new composting operations could be potentially significant and unavoidable.

17.14. POPULATION AND HOUSING

The level of construction effort is anticipated to range from upgrading working surfaces to construction of new facilities. The additional personnel required is estimated to consist of crews of 5 to10 workers; demand for these crews would be temporary (estimated 6-12 months per project). Therefore, it is anticipated that there would be no need for a substantial number of construction workers to migrate to an area where a composting operation is being modified or constructed, and that a sufficient construction employment base would likely be available. Depending on size, minimal new additional personnel would be needed to operate the facilities. Modified or newly constructed composting operations are anticipated to have less than significant cumulative impacts related to population and housing.

Mitigation Measure: None required.

17.15. PUBLIC SERVICES AND UTILITIES

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to public services and utilities. Composting operations are anticipated to be dispersed throughout California similar to existing solid waste facilities. As with other types of development, the development of a composting operation may have cumulatively significant impacts on electrical, water service, wastewater service, and storm water management facilities when considered with other past, present and future actions in the vicinity of the project. Based on review of General Plan EIRs, the following jurisdictions predict significant cumulative impacts for the public service and utility resources: City of Los Angeles, County of Los Angeles, City and County of San Diego, City of Rancho Cordova, City of Santa Clarita, Riverside County, and City of Corte Madera. Therefore, implementation of responses to comply with the General Order may have the potential to contribute to significant and unavoidable cumulative impacts.

Mitigation Measure: If the composting operation proposes to obtain wastewater service from a wastewater treatment provider (municipal or other public entity), the discharger would enter into an agreement for service with the provider. With an agreement for service and coordination regarding the quality of the wastewater conveyed to the wastewater treatment facility, this impact would be reduced to a less than significant level.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this public services and utilities assessment does not attempt to address

project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that public services and utilities impacts resulting from modification of existing or development of new composting operations could be potentially significant and unavoidable

17.16. TRANSPORTATION AND TRAFFIC

Implementation of compliance responses to the General Order, in conjunction with other projects that may be occurring in the area, may contribute to cumulative impacts to transportation and traffic.

The geographic scope of potential cumulative traffic impacts includes access routes to regional and local roadways used for haul routes and construction equipment/vehicle access throughout the project area. As described in Chapter 16, construction and operational impacts may be significant. The amount of construction activity would fluctuate depending on the particular type, number, or size of area, duration of usage for the varying equipment, and the phase of construction. These variations would affect the amount of project-generated traffic for both worker commute trips and material deliveries. Depending on the amount of trip generation and the location of the composting operations, implementation could conflict with applicable programs, plans, ordinances, or policies (e.g., performance standards, congestion management), and/or result in emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially due to project-generated heavy-duty truck trips. For new facilities, specific projects, depending on size and location, may create potential conflicts with adopted policies, plans, or programs supporting alternative transportation modes. Traffic impacts include temporary increases in traffic congestion, increased potential for traffic safety hazards, and temporary and intermittent impedances to access.

The project has the potential to contribute to potentially significant cumulative construction-related impacts as a result of (1) concurrent projects (such as land development projects) that generate increased traffic at the same time on the same roads as would the project, causing increased congestion and delays; and (2) infrastructure projects on roads that would be used by project construction workers and trucks, which could affect detour routes around project work zones or could delay project-generated vehicles past the work zones of those other projects. Implementation of circulation and detour plans, installing traffic control devices, and scheduling (to the extent feasible) truck trips outside of peak morning and evening commute hours may reduce the project's contribution to the cumulative impacts. However, some traffic disruption and increased delays would still occur during project construction, even with mitigation. There is lack of certainty about the timing (and identification) of development or modifications to composting operations, as well as that for other projects within the project's vicinity (specifically projects that would overlap. Therefore, implementation of responses to comply with the General Order may have the potential to contribute to significant and unavoidable cumulative impacts.

Mitigation Measure: Recognized measures that are routinely required by regulatory agencies or implemented as normal business practice to minimize traffic impacts may include:

- Minimize the number and length of access, internal, service and maintenance roads and use existing roads when feasible;
- Provide for safe ingress and egress to/from proposed project sites. Identify road design requirements for any proposed roads, and related road improvements;
- If new roads are necessary, prepare a road siting plan, and consult standards contained in federal, state, or local requirements. The plans should include design and construction protocols to ensure roads will meet the appropriate standards and be no larger than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Access roads should be located to avoid or minimize impacts to washes and stream crossings, follow natural contours and minimize side-hill cuts. Roads internal to a project site should be designed to minimize ground disturbance. Excessive grades on roads, road embankments, ditches, and drainages should be avoided, especially in areas with erodible soils;
- Prepare a Construction Traffic Control Plan and a Traffic Management Plan.

Because authority to determine project-level impacts and require project-level mitigation lies with the local land use and/or permitting agency for individual projects, and the analysis associated with this transportation and traffic assessment does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, this analysis takes a conservative approach in its post-mitigation significance conclusion and discloses, for CEQA compliance purposes, that traffic impacts resulting from modification of existing or development of new composting operations could be potentially significant and unavoidable.

18. GROWTH INDUCING IMPACTS

CEQA Guidelines section 15126.2, subdivision (d) require that an EIR evaluate growth-inducing impacts of a proposed action. A growth-inducing impact is defined by CEQA Guidelines as:

[T]he ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

A project can have direct and/or indirect growth-inducement potential. Direct growth inducement would result if a project involved construction of new housing. A project can have indirect growth inducement potential if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises), or if it would involve a substantial construction effort with short-term employment opportunities, and indirectly stimulate need for additional housing and services to support the new employment demand. Similarly, under CEQA, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service, such as expansion of a wastewater treatment plant, which might allow for more development in service areas.

The General Order would not result in a substantial increase in employment, and correspondingly, would not result in a substantial increase in population and associated demand for housing near existing composting operations that have employees, roadways and public service infrastructure in place. Construction of new composting operations may create job opportunities; however, it is not expected to generate more than 100 positions based on information collected from several large operations. Composting operations are also typically constructed to serve waste disposal needs of existing communities, or respond to state policy goals for increased diversion from existing communities. Composting operations typically do not promote new housing development in service areas.

Composting operations divert organic wastes that would otherwise be disposed of in a landfill, potentially extending the life of the landfill. By doing this, it allows the landfill owner or operator to conserve space for residuals that have no further end-use, allowing them to expand their radius of influence to accept residuals from other communities they currently do not serve. This could be potentially growth inducing for the business' service areas, but does not change the overall impact to the landfill's total disposal capacity.

Development of new composting operations may produce more compost than the current market requires, and may prompt composters to develop new markets for the surplus. This surplus may induce growth in businesses that sell or market compost to users such as agriculture and landscaping. Conversely, expansion of the compost industry may also cause declining sales for competitor businesses that manufacture and supply chemical fertilizers.

19. ALTERNATIVE ANALYSIS

19.1. FACTORS FOR SELECTING ALTERNATIVES

CEQA Guidelines section 15126.6, subdivision (c) recommends that an EIR briefly describe the rationale for selecting each of the alternatives. A reasonable range of alternatives is considered for this analysis. The following factors were considered in identifying a reasonable range of alternatives to the project:

- Does the alternative accomplish all or most of the primary project objectives?
- Is the alternative feasible from an economic, environmental, legal, social, and technological standpoint?
- Does the alternative avoid or lessen any significant negative environmental effects of the project?

As stated in Chapter 2, objectives of the General Order covered by the EIR are:

1. Adopt waste discharge requirements consistent with provisions of the Water Code and related state water quality control plans and policies to ensure protection of beneficial uses of the state's waters from waste discharges to land associated with composting operations.
2. Create statewide consistency with water quality regulations related to composting operations.
3. Streamline the water quality permitting process by providing a regulatory framework for composting operations that can be used by individual Regional Water Boards to act on applications filed by potential dischargers in a manner that avoids or mitigates potentially adverse environmental effects.
4. Provide for a broad range of materials allowed under the Order to support California's diversion goal.

19.2. ALTERNATIVES THAT WERE CONSIDERED BUT NOT FURTHER ANALYZED

CEQA Guidelines section 15126.6, subdivision (a) require that an EIR briefly describe the rationale for selecting the alternatives to be discussed, and suggest that an EIR also identify any alternatives that were considered by the lead agency, but were rejected as infeasible (CEQA Guidelines, § 15126.6, subd. (c)). The following alternatives were considered, but were eliminated from further consideration and analysis for reasons expressed below.

Limited Feedstock Coverage

An alternative that considered limiting the feedstock to only green, vegetative food, paper, and agricultural materials was considered to determine if such an alternative could minimize environmental impacts to water quality while meeting most of the project objectives. Under this alternative, composting operations that handle manure, biosolids, and other food wastes would be excluded from the project. While this alternative may reduce potential impacts to water quality due to the salt and nutrient loading potential of these types of materials, it was rejected

for further analysis because it would limit the potential for further diversion of these materials into a beneficial compost product in support of the state's diversion goal.

Wastewater Detention Pond Capacity Design Standard Alternative

Wastewater refers collectively to leachate, wash water, process wastewater, or contaminated non-process wastewater produced, generated, or falls upon the composting operation. The wastewater must be managed to prevent a condition of nuisance, degradation, or pollution to water quality. An alternative design standard to estimate the minimum capacity required for the detention pond from the 25-year return annual total precipitation value was considered to determine if such an alternative could minimize environmental impacts while meeting most of the project objectives. Under this alternative, the discharger would have to design, operate, and maintain a wastewater management system to contain all wastewater from a minimum 100-year design return annual total precipitation value (i.e., all wastewater generated for the wettest year during a 100-year period). This would reduce the probability of an unauthorized discharge event from 4 percent to 1 percent of occurring in any given year. This would also result in increasing the wastewater handling system capacity by approximately 15 percent, depending on site specific climate data.

Although this alternative has the potential to reduce impacts to water quality, it has the potential to increase impacts to biological, cultural, agricultural, and traffic due to the increased size of the system needed. The bigger the system, the more potential to encroach in areas that have sensitive wildlife and plant species, cultural artifacts of importance, agricultural lands, or require additional truck traffic if hauling wastewater off-site. In addition, a larger pond, more tanks, or bigger wastewater treatment plant would be more costly to construct and maintain.

To minimize the potential economic burden and environmental impacts of a larger handling system, the project also requires the discharger to submit a Water and Wastewater Management Plan that describes how wastewater will be managed to prevent discharge. Composting operations require moisture as part of manufacturing compost. Wastewater can be recycled back into the process to assist with aerobic decomposition. Therefore, the 25-year return annual total precipitation specification, coupled with proper wastewater management and water balance may reduce the probability for discharge. Hence, this alternative was rejected for further analysis.

Delaying Implementation of the Order

This alternative responds to stakeholders that expressed that implementation of the General Order be delayed until comparable requirements are developed for other end-of-life organic management pathways such as landfilling or land application. This alternative fails to meet all of the objectives and also fails to reduce the direct environmental impacts to water quality. As discussed in Chapter 1, permitting of these facilities has been delayed since expiration of the waivers. Although there are several facilities with WDRs, the rest of them are awaiting coverage under this General Order in lieu of individual WDRs. In addition, landfills are currently regulated under more restrictive requirements of California Code of Regulations, title 27, division 2. Land application is also regulated under the Water Code, including discharges of fresh green material to land as demonstrated by a case where the Regional Water Board pursued enforcement actions against a land owner within the San Diego region for the unauthorized discharge. Therefore, this alternative was rejected for further analysis.

Site-Specific Permitting Approach

This alternative responds to stakeholders that expressed the need for a permitting approach based on site-specific conditions relevant to water quality, and not merely tiers tied to the level of permitted capacity. This alternative is the same as the No Project Alternative. In addition, flexibility is provided within the General Order to allow dischargers to propose methods for handling wastewater and complying with surface design and construction requirements. Dischargers are allowed to base their assumptions on site-specific factors. See the No Project Alternative analysis below.

Exempt All Existing Facilities

This alternative responds to stakeholders that expressed the need to exempt all existing composting facilities. This alternative does not meet any of the objectives and fails to reduce the direct impacts to water quality from these existing facilities. In addition, existing facilities were operating under some kind of permit, whether a WDR or waiver, currently or at some time. So these facilities are not unfamiliar with protection of groundwater and surface water quality. In addition, exempting facilities creates an unfair market advantage to those that obtained WDRs absent of the waiver. As such, this alternative was rejected for further analysis.

19.3. ALTERNATIVES SELECTED FOR FURTHER CONSIDERATION

No Project Alternative

State CEQA Guidelines section 15126.6, subdivision (e) provides that a No Project Alternative shall also be evaluated along with its impact. The No Project Alternative shall discuss existing conditions at the time the Notice of Preparation was published, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans, and consistent with available infrastructure and community services.

As discussed in Chapter 3, nine composting operations are regulated under the California Code of Regulations, title 27 requirements, eight operations are regulated under title 27 exemption requirements, eight are regulated under the San Diego Regional Water Board's conditional waiver, and most of the remaining facilities operate under conditions of the expired waiver. Facilities with WDRs are those that proposed modifications or began operation after expiration of the waiver. Others have operated under conditions of the expired waiver until further direction from the Water Boards is provided.

Under this alternative, existing composting operations without WDRs, including those operating under the expired waiver, and new operations would have to submit a Report of Waste Discharge to the Regional Water Board for review and consideration. As part of that process, the discharger will be required to comply with current CEQA regulations by providing the appropriate environmental document to the Regional Water Boards detailing site-specific impacts. The Regional Water Board would then issue WDRs and MRPs, as appropriate, based on the information and level of protection needed.

Under the No Project Alternative, we assumed that those facilities that meet Tier I criteria would most likely be regulated similar to those existing eight facilities that have WDRs prescribing waste pile construction and water quality monitoring (groundwater, leachate, and surface water)

as discussed in Chapter 3. Those that meet Tier II criteria would be regulated similar to those nine facilities with WDRs prescribing design requirements are detailed in title 27, division 2, which generally consists of pads meeting a hydraulic conductivity of 1 x 10^{-7} cm/s; leachate collection and removal systems; precipitation and drainage controls; ponds designed as Class II surface impoundments; water monitoring (groundwater, surface water, and unsaturated zone); and financial assurances. The No Project Alternative would not change the time currently needed for permitting composting operations.

This alternative fails to meet objectives of the proposed project. The No Project Alternative would not create statewide consistency or streamline the water quality permitting process for composting operations.

Impacts

Under the No Project Alternative, the General Order would not be implemented, so individual WDRs would be developed for existing composting operations that do not currently have a WDR and for new operations. Under this scenario, composting operations would be analyzed on an individual basis, and would be subject to individual federal, state, and local laws, regulations, ordinances and guidance. It is anticipated that this alternative would have similar impacts as the project to aesthetics, hazards, hazardous materials, land use, noise and population and housing.

Impacts resulting from construction at compost facilities (new or modifications) would potentially be greater for agriculture, air quality, greenhouse gas, biological, cultural, public services, utilities, and traffic due to more stringent design and construction requirements. These requirements may result in more construction impacts from building ponds with a larger containment capacity, additional pad surface percolation limits, and new monitoring systems for groundwater, unsaturated zones, and surface water. The bigger the systems, the more potential to encroach in areas that have sensitive wildlife and plant species, cultural artifacts of importance, agricultural lands, or require additional truck traffic if hauling wastewater off-site. However, due to the more stringent siting and design requirements, the facility would be required to impose mitigations per regulations making the impact to geology, soils, and minerals potentially less than the project.

Adoption of the No Project Alternative may also result in fewer composting operations being constructed due to these more stringent design requirements. This could result in greater impacts from greenhouse gas emissions if potential feedstocks are disposed of in landfills where it may create methane that would have otherwise been avoided by composting. This would have a negative effect on California's efforts to reduce greenhouse gas emissions.

Tier II Facilities - Increase Hydraulic Conductivity Pad Requirement Alternative

The Increase Hydraulic Conductivity Pad Requirement Alternative would replace the General Order's hydraulic conductivity requirement for Tier II facilities of 1.0 x 10^{-5} cm/s or less for a pad with a more permeable requirement, such as 1.0 x 10^{-4} cm/s or 1.0 x 10^{-3} cm/s. Hydraulic conductivity represents the ease with which water can move through porous spaces and fractures such as soil or rock. The greater the value, the faster the water moves or percolates through the soil. This alternative was considered in response to stakeholder comments regarding the economic burden of creating a pad surface meeting the lower hydraulic

conductivity standard. The greater the value, the less construction or work is needed to obtain a pad capable of meeting it. This alternative meets all the project objectives, and was considered for further environmental analysis.

Impacts

Under the Increase Hydraulic Conductivity Pad Requirement Alternative, the General Order would be implemented with a minimum hydraulic conductivity design requirement of 1×10^{-4} cm/s or 1×10^{-3} cm/s. It is anticipated that this alternative would have similar impacts as the project to aesthetics, agriculture and forestry, biological, cultural, geology, soils, minerals, hazards and hazardous materials, land use, noise, population and housing, and public services and utilities.

Impacts resulting from compost operation construction (new or modifications) would potentially be less for air quality, traffic, and transportation due to meeting the less stringent hydraulic conductivity requirements. The less stringent standards increases the range of potential soil types likely to meet the requirements, therefore increasing the likelihood that existing and new composting pads may meet the standard with minimal construction. Less construction results in less emission of criteria pollutants from heavy equipment, less greenhouse gas emissions, and less traffic on the roads.

Impact from this alternative is anticipated to have a greater effect on water quality. As described in Chapter 11, several studies concluded that composting nutrient rich feedstocks on coarse-textured soils can create elevated nitrates in shallow groundwater. The alternative of allowing a hydraulic conductivity value of 1×10^{-4} cm/s or 1×10^{-3} cm/s represents the lower level for sands, which is a coarse-textured soil type. Because this alternative increases the probability of degrading groundwater, it is expected to have a greater negative impact on water quality than the project.

Tier II Facilities - Groundwater Protection Monitoring in lieu of Hydraulic Conductivity Requirement for Pond Alternative

The Groundwater Protection Monitoring in lieu of Hydraulic Conductivity Requirement for Pond Alternative would allow dischargers to choose whether to construct the pond per the hydraulic conductivity requirements and pan lysimeter monitoring device, or demonstrate through monitoring that the groundwater has not been impacted by their operations. This alternative was considered in response to stakeholder comments requesting that they be allowed to demonstrate that groundwater has not been impacted by their operations which would save costs from constructing a compliant pond and associated compliance monitoring device. This alternative meets three of the four project objectives, and was considered for further environmental analysis.

Impacts

Under this alternative, the General Order would allow the discharger to propose a groundwater protection system in lieu of constructing a pond meeting the minimum hydraulic conductivity design requirement of 1×10^{-6} cm/s with a pan lysimeter monitoring device. It is anticipated that this alternative would include the construction and maintenance of groundwater monitoring wells and associated maintenance and monitoring. This alternative would not include construction of a pond with pan lysimeter or modifications to an existing pond as required by the General Order.

It is expected that this alternative would have similar impacts as the project to land use, public services and utilities, and population and housing. Impacts resulting from installation of groundwater monitoring wells would potentially be less for aesthetics, agriculture and forestry, air quality, biological, cultural, geology, soils, minerals, hazards and hazardous materials, noise, and traffic and transportation due to less construction and operational requirements from the project.

Groundwater monitoring wells are typically constructed below-grade and not visible from distances, as such, less aesthetic impact. By not constructing a pond with pan lysimeter or expanding the footprint of a pond, less land is used that could impact agriculture, forestry, biological, cultural, geology, soils, and mineral resources. In addition, less construction results in less emission of criteria pollutants from heavy equipment, less greenhouse gas emissions, less operational noise, and less traffic on the roads.

However, this alternative is also a reactive approach that may have a greater adverse effect on water quality. As discussed in Chapter 11, wastewater potentially generated and contained within a detention pond is high in nutrients which have the potential to degrade water quality. A pond is assumed where wastewater will be contained for extended periods of time as such the head or force imposed on the containment system is constant. Lining of the pond and installing a pan lysimeter monitoring device is a proactive approach to protecting groundwater from direct application of wastewater onto land. If through groundwater protection monitoring the operation has shown degradation or pollution to waters, the operation would be required to implement corrective action measures. Corrective action measures may include, but are not limited to, pumping and treating the groundwater and/or building an impervious surface, which could potentially have the same or greater environmental impacts than the project.

19.4. COMPARISON OF ALTERNATIVES

The relative impacts of various project alternatives identified for consideration in this document, including the project and No Project Alternative, are shown in Table 19-1. In addition, the significance of each impact is assumed to be prior to implementation of feasible mitigation measures. This is done to identify which alternatives would avoid or substantially lessen one or more potentially significant impacts, as required by State CEQA Guidelines section 15126.6, subdivision (a). For the level of significance of the proposed project after mitigation, refer to the impact analysis in Chapters 3-16.

Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
4	**AESTHETICS**			
	Impact 4.1: Compliance with the General Order at composting operations is not expected to have a substantial adverse effect on a scenic vista.	E	E	E
	Impact 4.2. Compliance with the General Order at composting operations is not expected to substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	E	E	LS
	Impact 4.3. Compliance with the General Order at composting operations is not expected to substantially degrade the existing visual character or quality of the site and its surroundings.	E	E	LS
	Impact 4.4. Compliance with the General Order at composting operations is not expected to create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	E	E	LS
5	**AGRICULTURE AND FORESTRY**			
	Impact 5.1. Compliance with the General Order at composting operations may have the potential to result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.	E	E	LS
	Impact No. 5.2 Compliance with the General Order at composting operations may have the potential to conflict with existing zoning for agricultural use or a Williamson Act contract.	E	E	LS
	Impact 5.3. Compliance with the General Order at composting operations is not expected to result in conflict with existing zoning for, or cause rezoning of, forest land (Pub. Resources Code, § 12220, subd. (g)) or timberland (Pub. Resources Code, § 4526), or timberland zoned as Timberland Production (as defined by Government Code section 51104(g)).	E	E	LS
	Impact No. 5.4. Compliance with the General Order at composting operations is not expected to result in the loss of forest land or conversion of forest land to non-forest use.	E	E	LS

E – Equal impact to the project LS – Less significant impact than project PG – Potentially Greater impact than project

Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
5	AGRICULTURE AND FORESTRY			
	Impact No. 5.5. Compliance with the General Order at composting operations is not expected to 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 forest land to non-forest use.	E	E	LS
6	AIR QUALITY AND GREENHOUSE GASES			
	Impact 6.1. Compliance with the General Order at composting operations may have the potential to conflict with or obstruct implementation of an applicable air quality plan.	E	E	LS
	Impact 6.2. Compliance with the General Order at composting operations may have the potential to violate air quality standards or contribute substantially to an existing or project air quality violation.	E	E	LS
	Impact 6.3 Compliance with the General Order at composting operations may have the potential to result in considerable net increase of any non-attainment pollutant for which the project region is under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	E	E	LS
	Impact 6.4: Compliance with the General Order at composting operations may have the potential to lead to exposure of sensitive receptors in the vicinity of substantial pollutant concentrations from stationary and mobile sources.	E	E	E
	Impact 6.5. Compliance with the General Order at composting operations may have the potential to create objectionable odors affecting a substantial number of people.	E	E	LS
	Impact 6.6. Compliance with the General Order at composting operations may have the potential to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	PG	E	LS
	Impact 6.7. Compliance with the General Order at composting operations may have the potential to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs.	E	E	E

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Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
7	**BIOLOGICAL RESOURCES**			
	Impact 7.1. Compliance with the General Order at composting operations may have the potential to 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 US Fish and Wildlife Service.	PG	E	LS
	Impact 7.2. Compliance with the General Order at composting operations may have the potential to have a substantial adverse effect on riparian habitat, or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service.	PG	E	LS
	Impact 7.3. Compliance with the General Order at composting operations may have the potential to have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through removal, filling, hydrological interruption or other means.	E	E	LS
	Impact 7.4. Compliance with the General Order at composting operations may have the potential to 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 impede the use native wildlife nursery sites.	E	E	LS
	Impact 7.5. Compliance with the General Order at composting operations may have the potential to conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance.	E	E	LS
	Impact 7.6. Compliance with the General Order at composting operations may have the potential to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan.	E	E	LS

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Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
8	**CULTURAL RESOURCES**			
	Impact 8.1. Compliance with the General Order at composting operations may have the potential to cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5	E	E	LS
	Impact 8.2. Compliance with the General Order at composting operations may have the potential to cause a substantial adverse change in the significance of archaeological resource pursuant to § 15064.5.	E	E	LS
	Impact 8.3. Compliance with the General Order at composting operations may have the potential to directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature.	E	E	LS
	Impact 8.4. Compliance with the General Order at composting operations may have the potential to disturb human remains, including those interred outside formal cemeteries.	E	E	LS
9	**GEOLOGY, SOILS, AND MINERALS**			
	Impact 9.1: Compliance with the General Order at composting operations may have the potential to expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death from: • 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; • Strong seismic ground shaking; • Seismic-related ground failure, including liquefaction; • Landslides	LS	E	LS
	Impact 9.2. Compliance with the General Order at composting operations may have the potential to result in substantial erosion or loss of topsoil.	LS	E	E
	Impact 9.3. Compliance responses to the General Order at composting operations may have the potential to be on a geologic unit or soil that is unstable or that would become unstable because of the project and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	E	E	E

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Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
9	**GEOLOGY, SOILS, AND MINERALS**			
	Impact 9.4. Compliance responses to the General Order at composting operations may have the potential to be on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) that would create substantial risks to life or property.	E	E	E
	Impact 9.5. Compliance responses to the General Order at composting operations may have the potential to be on soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.	E	E	E
	Impact 9.6. Compliance with the General Order at composting operations is not expected to 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.	E	E	E
	Impact 9.7. Compliance with the General Order at composting operations is not expected to 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.	E	E	E
10	**HAZARDS AND HAZARDOUS MATERIALS**			
	Impact 10.1. Compliance with the General Order at composting operations may have the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	E	E	LS
	Impact 10.2. Compliance with the General Order at composting operations may have the potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving release of hazardous materials into the environment.	E	E	LS
	Impact 10.3. Compliance with the General Order at composting operations may have the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	E	E	E

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Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
10	**HAZARDS AND HAZARDOUS MATERIALS**			
	Impact 10.4. Compliance responses to the General Order at composting operations has the potential to locate the composting operation 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, may have the potential to create a significant hazard to the public or the environment.	E	E	E
	Impact 10.5. Compliance responses to the General Order at composting operations may located within an area covered by 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, may have the potential to result in a safety hazard for people residing or working in the project area.	E	E	E
	Impact 10.6. Compliance responses to the General Order at composting operations located within the vicinity of a private airstrip may have the potential to result in a safety hazard for people residing or working in the project area.	E	E	E
	Impact 10.7. Compliance with the General Order at composting operations is not expected to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	E	E	E
	Impact 10.8. Compliance with the General Order at composting operations is not expected to 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.	E	E	E
	Impact 10.9. Compliance with the General Order at composting operations may have the potential to generate vectors (flies, mosquitoes, rodents, etc.) to such an extent that the applicable enforcement agency determines that any of the vectors occur in numbers considerably in excess of those found in the surrounding environment, disseminate widely from the property, and cause harmful effects on the public health of the surrounding population.	E	E	LS

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Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
11	**HYDROLOGY AND WATER QUALITY**			
	Impact 11.1. Compliance with the General Order at composting operations may have the potential to result in violation of water quality standards or waste discharge requirements.	E	PG	PG
	Impact 11.2. Compliance with the General Order at composting operations is not expected to have the potential to 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).	E	E	LS
	Impact 11.3. Compliance with the General Order at composting operations may have the potential to 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.	PG	E	E
	Impact 11.4. Compliance with the General Order at composting operations may have the potential to 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.	PG	E	E
	Impact 11.5. Compliance with the General Order at composting operations may have the potential to create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.	E	E	E
	Impact 11.6. Compliance with the General Order at composting operations may have the potential to otherwise substantially degrade water quality.	LS	PG	PG

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Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
11	**HYDROLOGY AND WATER QUALITY**			
	Impact 11.7. Compliance with the General Order at composting operations is not expected to 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.	E	E	E
	Impact 11.8. Compliance with the General Order at composting operations may have the potential to place within a 100-year flood hazard area structures which would impede or redirect flood flows.	E	E	E
	Impact 11.9. Compliance with the General Order at composting operations may have the potential to 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.	E	E	LS
	Impact 11.10. Compliance with the General Order at composting operations is not expected to create a significant risk of inundation by seiche, tsunami, or mudflow.	E	E	E
12	**LAND USE/PLANNING AND RECREATION**			
	Impact 12.1. Compliance with the General Order at composting operations is not expected to physically divide an established community.	E	E	E
	Impact 12.2. Compliance with the General Order at composting operations is not expected to 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.	E	E	E
	Impact 12.3. Compliance with the General Order at composting operations is not expected to conflict with an applicable habitat conservation plan or natural community conservation plan.	E	E	E
	Impact 12.4. Compliance with the General Order at composting operations is not expected to significantly 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.	E	E	E

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Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
	Impact 12.5. Compliance with the General Order at composting operations is not expected to include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	E	E	E
13	**NOISE**			
	Impact 13.1. Compliance with the General Order at composting operations may have the potential to cause exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies.	E	E	E
	Impact 13.2. Compliance with the General Order at composting operations may have the potential to result in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.	E	E	LS
	Impact 13.3. Compliance with the General Order at composting operations may have the potential to result in substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	E	E	LS
	Impact 13.4. Compliance with the General Order at composting operations may have the potential to result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	E	E	E
	Impact 13.5. Compliance with the General Order at composting operations may have the potential to expose people residing or working in the project area to excessive noise levels (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).	E	E	E
	Impact 13.6. Compliance with the General Order at composting operations may have the potential to expose people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip).	E	E	E

E – Equal impact to the project LS – Less significant impact than project PG – Potentially Greater impact than project

Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
14	**POPULATION AND HOUSING**			
	Impact 14.1. Compliance with the General Order at composting operations is not expected to result in 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	E	E
	Impact 14.2. Compliance with the General Order at composting operations is not expected to displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.	E	E	E
	Impact 14.3. Compliance with the General Order at composting operations is not expected to result in displacement of substantial numbers of people, necessitating the construction of replacement housing elsewhere.	E	E	E
15	**PUBLIC SERVICES, UTILITIES, AND ENERGY**			
	Impact 15.1. Compliance with the General Order at composting operations is not expected to result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, parks or other public facilities.	E	E	E
	Impact 15.2. Compliance with the General Order at composting operations may have the potential to exceed wastewater treatment requirements of the applicable Regional Water Board.	E	E	LS
	Impact 15.3. Compliance with the General Order at composting operations may have the potential to result in construction and operation of new water or wastewater treatment facilities or expansion of existing facilities.	E	E	LS

E – Equal impact to the project LS – Less significant impact than project PG – Potentially Greater impact than project

Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
15	**PUBLIC SERVICES, UTILITIES, AND ENERGY**			
	Impact 15.4. Compliance with the General Order at composting operations may have the potential to result in construction and operation of new storm water treatment facilities or expansion of existing facilities.	E	E	LS
	Impact 15.5. Compliance with the General Order at composting operations is expected to have sufficient water supplies available to serve the project from existing entitlements and resources.	E	E	E
	Impact 15.6. Compliance with the General Order at composting operations may have the potential to result in in a determination by the wastewater treatment serving the project that it does not have the adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	E	E	LS
	Impact 15.7. Compliance responses to the General order at composting operations are expected to be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.	E	E	E
	Impact 15.8. Compliance with the General Order at composting operations is expected to comply with federal, state, and local statutes and regulations related to solid waste.	E	E	E
	Impact 15.9. Compliance with the General Order at composting operations may have the potential to result in the construction of new sources of energy supplies or additional energy infrastructure capacity, the construction of which could cause significant environmental effects.	E	E	E
	Impact 15.10. Compliance with the General Order at composting operations is not expected to conflict with applicable energy policies or standards.	E	E	E

E – Equal impact to the project LS – Less significant impact than project PG – Potentially Greater impact than project

Table 19-1 Project Alternatives: Comparison of Significant Effects

CHAPTER	IMPACT	No Project	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Protection Monitoring in lieu of Pond Requirement
16	TRANSPORTATION			
	Impact 16.1. Compliance with the General Order at composting operations may have the potential to result in 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 and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.	E	E	E
	Impact 16.2. Compliance with the General Order at composting operations may have the potential to create 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 agency for designated roads or highways.	E	E	E
	Impact 16.3. Compliance with the General Order at composting operations may have the potential to 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.	E	E	LS
	Impact 16.4. Compliance with the General Order at composting operations is not expected to substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or uncompetitive uses (e.g. farm equipment).	E	E	E
	Impact 16.5. Compliance with the General Order at composting operations may have the potential to result in inadequate emergency access.	E	E	E
	Impact 16.6. Compliance with the General Order at composting operations may have the potential to result in conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	E	E	E
	Impact 16.7. Compliance with the General Order at composting operations may have the potential to result in impacts to surrounding roadways.	E	E	LS

E – Equal impact to the project LS – Less significant impact than project PG – Potentially Greater impact than project

19.5. ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines section 15126.6, subdivision (d) requires that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the project. CEQA Guidelines section 15126.6, subdivision (e) requires that the alternatives analysis must identify the "environmentally superior" alternative among those considered. If the "No Project" alternative is identified as the environmentally superior alternative, then the EIR must also identify an environmentally superior alternative among the other alternatives.

Table 19-2 shows the ability of each alternative to achieve the project objectives. As shown by the table, the No Project Alternative meets two of the four project objectives. The Increase Hydraulic Conductivity for Pad Requirement Alternative and Groundwater Protection Monitoring in lieu of Hydraulic Conductivity Requirement for Pond Alternative meet three of the four objectives for Tier II facilities.

Table 19-2 Alternative Comparison: Ability to Meet Project Objectives

Objective	No Project Alternative	Tier II - Increase Hydraulic Conductivity for Pad Requirement	Tier II - Groundwater Monitoring in lieu of Pond Requirement
Adopt waste discharge requirements consistent with the provisions of the Water Code and related state water quality control plans and policies to ensure protection of beneficial uses of the state's waters from waste discharges to land associated with composting operations.	X	O	O
Create statewide consistency with water quality regulations related to composting operations.	O	X	X
Streamline the water quality permitting process by providing a regulatory framework for composting operations that can be used by individual Regional Water Boards to act on applications filed by potential dischargers in a manner that avoids or mitigates potentially adverse environmental effects.	O	X	X
Provide for a broad range of materials allowed under the Order to support California's diversion goal	X	X	X

X: Meets project objectives *O: Does not meet project objectives*

The analysis in this chapter shows that the No Project Alternative is not the environmentally superior alternative because it does not meet two of the four project objectives, and may potentially have greater adverse effects on some environmental resource areas from the more stringent design and construction requirements.

The Increase Hydraulic Conductivity for Pad requirement for Tier II facilities meets three of the four objectives with respect to consistency, streamlining, and allowing a broad range of materials. However, the alternative increases the probability of degrading groundwater, and is expected to have a greater negative impact on water quality than the project or other alternatives.

Table 19-1 indicates the Groundwater Protection Monitoring in lieu of Hydraulic Conductivity Requirement for Pond Alternative at Tier II facilities could potentially reduce impacts in some environmental resource areas due to fewer construction activities compared to the project. Table 19-2 indicates that this alternative also meets three of the four the project objectives.

The Alternatives Analysis indicates the Groundwater Protection Monitoring in lieu of Hydraulic Conductivity Requirement for Pond requirement has the potential to be the environmentally superior alternative when compared to the No Project Alternative and the Increase Hydraulic Conductivity for Pad requirement. This alternative is based on the premise that as long as groundwater monitoring shows no impact to water quality, then the environmental impacts would be less than the project.

However, this alternative is a reactive approach that may ultimately have a greater adverse effect on water quality, particularly in areas underlain by granular soil, fractured rock and/or shallow groundwater. As discussed in Chapter 11, wastewater contained within a detention pond is high in nutrients, metals, salts, pathogens, oxygen-reducing compounds, and other constituents of concern which have the potential to degrade surface waters or groundwater. The force, or “head” imposed on the pond surface is constant; therefore an unlined pond is continually subjected to potential seeps or leaks.

Under the Groundwater Protection Monitoring alternative, if monitoring indicates a release resulting in degradation or pollution to waters, the operation would be required to implement corrective action measures. Corrective action measures may include but not be limited to activities such as pumping and treating the groundwater and/or building an impervious surface, which could potentially have greater environmental and economic impacts than containing wastewater within a lined detention pond. Corrective action after a release of waste constituents may not reverse the effects of degradation or pollution for an unknown period of time, thus the Groundwater Protection Monitoring alternative may have the potential to have an adverse effect on water quality and greater environmental impact if corrective action measures are required. Installation of a geosynthetic liner to meet the hydraulic conductivity requirement for a detention pond at Tier II facilities is an example of a proactive approach to protecting groundwater from direct application of wastewater onto land.

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