CHAPTER 4
Environmental Analysis

This chapter discusses the potential environmental impacts of implementing the City of Merced (City) Wastewater Treatment Plant (WWTP) Expansion Project (Project) and identifies proposed mitigation measures, where appropriate, that would avoid, reduce, or otherwise minimize these effects to less-than-significant levels. In cases where no mitigation is available or where the specified mitigation would not reduce the impact to a less-than-significant level, this fact is noted.

According to the California Environmental Quality Act (CEQA) Guidelines Section 15382, a significant effect on the environment means "… a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project." For each category of physical condition evaluated in this environmental impact report (EIR), thresholds of significance have been developed using criteria discussed in the CEQA Guidelines; criteria based on factual or scientific information; criteria based on regulatory standards of local, state, and federal agencies; and criteria based on goals, objectives, and policies identified in applicable city, county, and regional plans.

Impact significance thresholds are defined for each environmental topic. These thresholds are based on criteria presented in Appendix G of the CEQA Guidelines. Where it was concluded that specific criteria were not applicable or relevant to evaluating the effect of the Project or the alternatives on the environment, they were eliminated from the discussion.

In determining the significance of the Project's impacts, each impact is identified as potentially significant, significant, cumulatively significant, significant and unavoidable, or less than significant. The cumulative effect and growth-inducing analysis in this EIR is based on the implementation of the Project in combination with other identified projects that may generate similar effects. An analysis of cumulative and growth-inducing effects of the Project is provided in Chapter 6, Growth-Inducing Impacts, and Chapter 7, Other Statutory Considerations, respectively. Chapter 5, Project Alternatives, includes an impact summary of the alternatives evaluated in addition to the No Project Alternative.

Mitigation measures identified in this report are characterized in one of three categories: (1) measures necessary to reduce the identified impact below a level of significance; (2) measures recommended to reduce the magnitude of a significant impact, but not below a level of significance; and (3) measures recommended to reduce the magnitude of a less-than-significant impact.

4.1 Water Quantity

4.1.1 Significance Criteria

The Project would result in a significant impact on water quantity if it would:

- Substantially alter the drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion of siltation on- or offsite

- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

- 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 that would not support current land uses or planned uses for which permits have been granted).

4.1.2 Methodology

This section identifies hydrologic and groundwater issues that may be affected by the Project. The impact analysis focuses on foreseeable changes to the existing conditions described in Chapter 3, Environmental Setting, in the context of the significance criteria presented above. The discussion of hydrological impacts in this analysis is separated into surface water hydrology and groundwater hydrology to clearly differentiate potentially foreseeable effects that could result from the Project.

4.1.3 Impacts and Mitigation Measures

Impact 4.1.1: The change in point of discharge to Hartley Slough and increase in treated effluent flow would result in substantial adverse effects to the physical character and channel hydrology of Hartley Slough. (Potentially Significant)

The expanded WWTP would incrementally increase effluent flows from the current 8.5 million gallons per day (mgd) to 20 mgd. This rate of discharge would increase the average effluent flows in Hartley Slough from 13 cubic feet per second (cfs) to about 31 cfs (ECO:LOGIC, 2005). At 11.5, 12, or 16 mgd, the WWTP effluent would discharge at a rates of 17.7, 18.5, or 24.7 cfs, respectively. These increased flows may alter the physical character of Hartley Slough, causing stream channel scouring along creek banks and bottom. These effects are considered potentially significant.

The Project would also include the relocation of the WWTP's effluent discharge to a location approximately 3,000 feet upstream of the effluent channel. This change would not reduce flows in

Hartley Slough since the new discharge location would be upstream from the current point of discharge on Hartley Slough. Further, the new outfall would be gravity-fed with energy dissipaters installed at its base to reduce the erosive potential of the effluent discharged to Hartley Slough. These outfall design features, in conjunction with the proposed incremental capacity increases and maintenance of riparian and bank-side vegetation, would minimize potential increases in scouring along the banks of Hartley Slough downstream of the new outfall.

The increased flow in Hartley Slough may also alter the distribution and composition of emergent vegetation within the stream channel. The ultimate composition and distribution of the vegetation may also be influenced by frequency of inundation by downstream diversion facilities that create backwater conditions in this portion of Hartley Slough. The degree of change to the channel morphology and stream character downstream of the new outfall would largely be dependent on the velocity of the increased flows and the frequency of inundation as a result of backwaters caused by downstream diversion structures. In the absence of detailed hydraulic modeling, this analysis assumes that the increase in effluent volume would lead to increased streambank exposure within Hartley Slough. This increased exposure would likely result in the mobilization of more sediment along the banks, especially finer sediments, as a consequence of an increased duration of bankfull discharge conditions. In this context, the Project could result in significant alteration to Hartley Slough, to the extent that substantial sedimentation would occur. This impact would be reduced to a less-than-significant level through the implementation of the following prescribed mitigation.

Mitigation Measure

> **Measure 4.1.1:** The City shall develop and implement a monitoring program to determine if incremental increases in the WWTP's effluent discharge are inducing excessive stream channel erosion on Hartley Slough downstream of the effluent discharge to the location of the existing agricultural water diversion facility. If observed, bank stabilization practices and other best management practices (BMPs) to control erosion shall be implemented. Measures could include, but are not limited to, placing riprap and planting stabilizing vegetation. If no substantial stream channel erosion is observed, the program may be terminated.
>
> **Impact Significance After Mitigation:** Less than significant.

Impact 4.1.2: The expanded WWTP would result in increased surface runoff resulting from new impervious surfaces, which could impact Hartley Slough. (Less than Significant)

Stormwater runoff from the expanded facilities would either drain to the existing WWTP storm drainage system because of its proximity to the north side of the WWTP or to a new drain pump station located west of the proposed re-aeration basin (the current chlorine contact basins). The new pump station would have a capacity of 1.99 mgd (or 1,400 gallons per minute). Most of the stormwater, basin drains, and plant drain flows would flow via gravity to the new pump station. The new drain pump station would pump flow through a 12-inch force-main from the sludge drying beds to a manhole near the influent junction box where the new and existing drainage

systems would combine. A new 24-inch gravity line would convey flow from the manhole to the new head works for treatment (ECO:LOGIC, 2005). The combined capacities of the two drainage systems would be sufficient to accommodate a 20-year, 24-hour rainfall event. Stormwater flows in excess of these pipe capacities would be routed to a new emergency retention pond and conveyed back to the new head works when sufficient capacity becomes available. These design features would ensure that the stormwater from the expanded WWTP would not become a source of polluted runoff to offsite areas (e.g., Hartley Slough) and would minimize to Hartley Slough the physical effects resulting from increased runoff from the WWTP. With these design features installed, this impact is less than significant.

Mitigation. None required.

Impact 4.1.3: Implementation of the Project would deplete local groundwater supplies or interfere substantially with groundwater recharge. (Less than Significant)

No new wells that could place additional water supply demands on the local aquifer are proposed as part of the Project. However, it is recognized that dewatering operations during Project construction could result in localized, temporary lowering of the water table in the vicinity of the WWTP site. Groundwater elevations within the Project area are relatively shallow, requiring pumping activities, especially in areas close to Hartley Slough. Drawdown resulting from the dewatering of shallow groundwater would be minimal and temporary in nature, with recharge occurring relatively quickly. No nearby agricultural or domestic production wells would be affected by dewatering operations during Project construction, as these wells generally draw groundwater from deeper depths

The Project would result in minimal increases in impervious surface area (e.g., structures and asphalt) beyond existing conditions and these new surfaces would be located away from Hartley Slough. Consequently, the Project is not expected to substantially interfere with local groundwater recharge. In light of these Project characteristics, impacts to groundwater resources are considered less than significant.

Mitigation: None required.

4.2 Water Quality

4.2.1 Significance Criteria

The Project would result in a significant impact on water quality if it would:

- Violate any water quality standards or waste discharge requirements

- Substantially alter the drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion of siltation on- or offsite

- Otherwise substantially degrade water quality

4.2.2 Methodology

This section identifies surface and groundwater quality issues that would be affected by the Project. The impact analysis focuses on foreseeable changes to the existing conditions described in Chapter 3, Environmental Setting, in the context of the significance criteria presented above. Significance determinations were based on a review of applicable water quality standards contained in the City's Waste Discharge Requirements (WDRs) for the current configuration of the WWTP, the Basin Plan for the Sacramento River and San Joaquin River, the California Toxics Rule, and applicable total maximum daily loads (TMDL) documentation for the San Joaquin River.

4.2.3 Impacts and Mitigation Measures

Impact 4.2.1: Construction of the Project would result in increased erosion and degrade water quality in Hartley Slough and downstream waterways. (Potentially Significant)

Construction of the Project would involve earthmoving activities such as excavation, grading, cut/fill, channel alteration, and soil stockpiling. The Project site is located on upland areas tributary to Hartley Slough, with two in-channel construction locations associated with the bridge replacement on Gove Road, a new WWTP entrance, and a new outfall. Project construction would result in soil erosion and subsequent discharge of suspended sediments to adjacent surface water or drainage channels. Accelerated erosion and deposition in waterways would degrade water quality by increasing channel sedimentation and suspended sediment levels (turbidity) and by adversely affecting associated aquatic and riparian habitats. Additionally, sedimentation to local drainage facilities would result in reduced storm flow capacities, resulting in localized ponding or flooding during storm events. Finally, dewatering of excavations would have the potential to affect surface waters if the discharge occurs without appropriate control measures for sediment, oil and grease, etc.

Stormwater management practices of diverting runoff to existing stormwater retention facilities and settling ponds would help to reduce available pathways for substantial erosion. Erosion control measures would be designed to handle runoff from a 20-year, 24-hour intensity storm event, consistent with City requirements. In addition to these considerations, the disturbance area associated with construction of the Project facilities is expected to require coverage under the State of California's National Pollutant Discharge Elimination System (NPDES) General Construction Permit (Order No. 99-08-DWQ). Coverage under the General Construction Permit would require the City to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP is required to address all Project construction-related activities

(e.g., grading and foundation construction) and requires approval from the Regional Water Quality Control Board (RWQCB) before construction begins.

In addition, as part of the Project's construction, dewatering operations would occur during the installation of the outfall pipeline and facility foundations. Dewatering activities may increase turbidity or mobilize previously undocumented groundwater contaminants. It is the City's intent that the extraction of surface and/or groundwater during dewatering operations would be conducted in accordance with Central Valley RWQCB General Order No. 5-00-175 (NPDES General Permit No. CA G995001). This General Order covers waste discharge requirements for dewatering and other low-threat discharges to surface water; however, the City is uncertain whether the volume of water to be extracted would be under the volumetric threshold of 0.25 mgd. In the context of all the activities that could potentially affect water quality during Project construction, the implementation of Mitigation Measures 4.2.1a and 4.2.1b would reduce these potential impacts to a less-than-significant level.

Mitigation Measures

Measure 4.2.1a: An Integrated Water Pollution Control Program shall be developed and implemented to manage and control potential erosion and water quality degradation that would occur during Project construction. Additionally, the program shall describe monitoring during construction activities, dewatering operations, in-water construction activities, and specific BMPs to avoid or minimize impacts to water quality.

The program shall be approved by the City before construction begins and shall be made conditions of performance with the City's contractor selected to build the Project. The program shall incorporate control measures in the following categories:

- Soil stabilization practices
- Sediment and runoff control practices
- Monitoring protocols
- Non-storm water management and waste management and disposal control practices
- Construction dewatering
- Hazardous materials management

Once approved by the City, the contractor shall be responsible throughout the duration of Project construction for installing, constructing, inspecting, and maintaining the control measures included in the program.

Measure 4.2.1b: The City will monitor groundwater that is collected during groundwater dewatering and, if it exceeds applicable surface water quality standards, will convey it into a water treatment system, where it will undergo treatment prior to its discharge to Hartley Slough. The water treatment system may use either temporary mobile treatment equipment or the WWTP. Either system would need to have applicable capability (i.e., activated carbon filtration or other suitable treatment technology) to treat and/or remove water quality constituents that exceed applicable surface water criteria.

Impact Significance After Mitigation. Less than significant.

Impact 4.2.2: The discharge of treated wastewater from the expanded WWTP would exceed water quality objectives identified in the Basin Plan and limits expressed in existing waste discharge requirements. (Potentially Significant)

Tertiary treatment upgrades would be constructed in accordance with the Central Valley RWQCB's Order 5-00-246. Proposed effluent quality is presented in Table 4-1. As shown, the Project would produce effluent quality that is equal to or better than the existing WWTP. Proposed effluent discharges would be lower in biological oxygen demand, total suspended solids, settleable solids, and total coliforms. The Project would eliminate the discharge of chlorine residuals and reduce total coliform bacteria to below permit limits for which the City is currently under a Mandatory Penalty Complaint No. R5-2004-0537.

However, as shown in Table 4-1 and noted in Chapter 3, Environmental Setting, effluent discharged from the Project into Hartley Slough would continue to result in receiving water temperature changes that exceed an annual average of 5°F, when compared to upstream ambient water temperatures. This exceedance is not consistent with Basin Plan objectives (CVRWQCB, 2004) for the beneficial use of cold-water habitat. As reflected in historic data (Appendix E), incidents of increased temperatures in the receiving water primarily occur during cooler months (October through March). When the ambient water temperatures have increased by more than 5°F, the receiving water temperatures typically are less than 70°F.

TABLE 4-1
EFFECTS OF WASTEWATER TREATMENT PLANT EXPANSION PROJECT ON WATER QUALITY

Water Quality Constituent	Existing Effluent Quality[1]	Proposed Effluent Quality
Biochemical oxygen demand, mg/L [2]	30	10 (4)
Total suspended solids, mg/L [2]	30	10 (4)
Settleable solids, ml/L [2]	0.2	0.1
Total coliforms, MPN/100 mL[2]	23	2.2
Chlorine residual, mg/L [2]	0.1	---
Grease and oil, mg/L [2]	10.0	10.0
Ammonia, mg/L [2]	2.3	2.3
Dissolved oxygen, mg/L [3]	Multiple samples below 5 mg/L specified as Basin Plan Objective	Within Basin Plan Objective
pH [3]	6.6 -7.6	6.5 - 8.5
Temperature [3]	Multiple samples exceeding 5°F of ambient temperature over averaging period	May exceed 5°F of ambient temperature over averaging period
Turbidity, NTU [3]	Multiple samples exceeding Basin Plan Objective	Within Basin Plan Objective

SOURCE: ECO:LOGIC, 2005

[1] Data from 2000 – 2004 operation
[2] As measured within WWTP treatment process
[3] As measured at downstream surface water monitoring
[4] Effluent quality at the point of discharge; before mixing with receiving water.

Notes: mg/L = milligram per liter; NTU = nephelometric turbidity unit; ml/L = milliliter per liter; MPN/100 mL = most probable number per 100 milliliters

Currently, no treatment processes have been proposed to minimize potential receiving water temperatures increase that exceed 5°F, as calculated when the averaging period is less than one year. Current engineering studies conclude that some level of effluent cooling would occur within the equalization basins prior to discharge to Hartley Slough. However, the degree of cooling may not be sufficient to achieve consistency with Basin Plan objectives during the winter months.

The equalization ponds have an estimated capacity to store up to 200 million gallons of treated effluent. Operating at a 12 mgd rate, the ponds could store effluent for up about 16 days; while at 20 mgd, the ponds could store effluent for 10 days. Further detailed study is needed to determine if this retention time is sufficient to achieve sufficient effluent cooling. If not sufficiently cooled, discharges would cause receiving water temperature increases inconsistent with Basin Plan objectives. This represents a potentially significant impact.

Mitigation Measure

Measure 4.2.2. The City shall assess and install a suitable effluent cooling system to comply with temperature receiving water objectives as identified in the Basin Plan (CVRWQCB, 1998). The selected system for effluent cooling, including use of the equalization basins, or installing mechanical chillers or cooling towers, would be sized to provide sufficient cooling to maintain effluent temperature within 5°F of the average annual ambient water temperature. The cooling system shall be constructed within the boundaries of the expanded WWTP site and not generate additional adverse effects to biological resources, wetlands, or sensitive habitats; would not pose a visual nuisance; or would not create obtrusive noise or other emissions. Cooling technologies will initially be sized for the 16 mgd capacity, with a provision to add additional units to accommodate the ultimate 20 mgd capacity.

Impact Significance After Mitigation: Less than significant.

Impact 4.2.3: The Project would eliminate chlorine disinfection from the wastewater treatment process, and as a result, several disinfection by-products would no longer be formed in the treated effluent. (Beneficial)

Under Section 303(c)(2)(B) of the Clean Water Act, states are required to adopt numeric criteria for the priority toxic pollutants listed under section 307(a) if those pollutants could be reasonably expected to interfere with the designated uses of state waters. The numeric criteria are referred to as the California Toxics Rule (CTR), which identifies maximum contaminant levels for 126 pollutants; commonly referred to as Priority Pollutants. The City routinely tests for the 126 Priority Pollutants within its wastewater effluent; consistent with its waste discharge requirements (WDRs) and NPDES Permit.

TABLE 4-2
DISINFECTION BY-PRODUCTS ASSOCIATED WITH CHLORINE DISINFECTION

Disinfection By-Product	Maximum Observed Concentration
Chloroform, µg/L	52
Dichlorobromomethane, µg/L	19
Dibromochloromethane, µg/L	4

SOURCE: ECO:LOGIC, 2005

µg/L = micrograms per liter

The City's WWTP is currently operating under Mandatory Penalty Complaint No. R5-2004-0537 in response to exceeding permitted limits for total coliform bacteria and total residual chlorine (CVRWQCB, 2004). As shown in Table 4-2, the historic use of chlorine in the City's disinfection process has resulted in the production of disinfection by-products. These constituents can cause fish mortality at the concentrations detected.

With the addition of UV disinfection, the quality of the wastewater effluent would be improved when compared to the existing conditions because of the proposed tertiary treatment upgrades and the removal of the chlorine disinfection process (Table 4-1). These improvements would rectify historic discharges of total coliform bacteria, total residual chlorine standards, and the chlorine disinfection by-products listed in Table 4-2. Specifically, the elimination of chlorine disinfection processes would eliminate the production of disinfection by-products that have historically been discharged as part of the WWTP effluent. Based on the WWTP improvements included as part of the project, the impact of the Project is considered beneficial.

Mitigation: None required.

Impact 4.2.4: The Project would continue to discharge in the treated effluent other Criteria Pollutants, Non-Priority Pollutants, and 303(d) Listed Contaminants at levels consistent with the California Toxics Rule and other applicable water quality standards. (Less than Significant)

Table 4-3 lists Criteria Pollutants that are currently and would continue to be discharged in the WWTP effluent. The anticipated concentrations of these pollutants would be within levels consistent with the California Toxics Rule and/or other applicable surface water quality standards. The installation of these improvements would not have significant adverse environmental effects.

As shown in Table 4-3, the Project would improve effluent quality to meet the limits specified. In particular, the concentrations of lead and aluminum would be reduced below current concentrations using tertiary filtration and source controls. As a result, the Project would not result in further degradation of surface water quality for the listed contaminants when compared to existing conditions.

TABLE 4-3
OTHER REGULATED EFFLUENT CONTAMINANTS AND FUTURE CONCENTRATION LIMITS

Constituent	Existing Effluent Concentration	Proposed Effluent Limit
Copper, µg/L	3.5	Calc'd (~4.1)
Lead, µg/L	1.5	Calc'd (~0.93)
Aluminum, µg/L	100	87
Barium, µg/L	100	100
Sodium, µg/L	No data	69
Mercury, µg/L (lb/day)	0.0086	0.050 (0.0006)
Diazinon, µg/L	ND	0.056
Selenium, µg/L (lb/day)	ND	5 (0.13)
Boron, µg/L (lb/day)	No data	700 (13)
Electrical conductivity, µmhos/cm	No data	700

SOURCE: ECO:LOGIC, 2005

Notes: µg/L = micrograms per liter; µmhos/cm = micromhos per centimeter; lb/day = pounds per day; calc'd = calculated

This impact is less than significant.

Mitigation: None required.

Impact 4.2.5: Expansion of the WWTP would increase the discharged salt load to downstream surface waters. (Less than Significant)

The WWTP is located in the San Joaquin River drainage area, upstream of Salt Slough in the San Joaquin River TMDL study area. During water years 1977 through 1997, the total mean annual salt and boron load in the lower San Joaquin River was 1.1 million tons and 975 tons, respectively. The sub-watershed draining the Merced area during this period contributed an average of about 100,000 tons of salt and 66 tons of boron per year to the lower San Joaquin River. This represents about 9 percent of the lower San Joaquin River's total salt load and 7 percent of its total boron load. Generally, salt and boron loads are associated with high flow events (CVRWQCB, 2004).

The WWTP currently discharges approximately 4,300 tons of salt annually, based on an effluent flow rate of 7.1 mgd (CVRWQCB, 2004). However, because the effluent is often intercepted and diverted for irrigation just downstream of the WWTP, the Salt and Boron TMDL Report acknowledges that the WWTP currently has no direct discharge of salt and boron to the lower San Joaquin River.

Because the WWTP would increase its effluent discharge up to 20 mgd, it is reasonably foreseeable that some portion of the increased discharge could reach the lower San Joaquin River. Table 4-4 presents the existing and proposed mean monthly municipal and industrial salt loads that would be discharged from the Project. Total dissolved solids (TDS) is often used as a measure of salinity.

TABLE 4-4
EXISTING AND ESTIMATED SALT LOADS FROM THE WASTEWATER TREATMENT PLANT

	Mean Monthly Flow (Acre-Feet)	Mean Flow Weighted Average TDS (mg/L)	Mean Monthly Municipal and Industrial Salt Load (Tons/Month)
Current Discharge	782	480	451
20 mgd Discharge	1,841	463	1,158

SOURCE: CVRWQCB, 2004; ECO:LOGIC, 2005; ESA, 2006

Notes: mgd = million gallons per day; mg/L = milligrams per liter; TDS = total dissolved solids

The CVRWQCB Salt and Boron TMDL Technical Report indicates that the WWTP watershed has a total salt load of 100,000 tons per year, of which 78,000 tons per year constitutes the background load and the remaining 22,000 tons per year are attributable to controllable sources (e.g., loads from agriculture, managed wetlands, groundwater and municipal sources). The total salt load derived from this subarea equates to roughly 2 percent of the total lower San Joaquin River basin mass salt load. The total boron load from this subarea is also about 2 percent of the

total lower San Joaquin River basin mass boron load. The TMDL Report notes that most of the controllable salt and boron loading to the lower San Joaquin River watershed comes from non-point sources rather than point sources, such as the WWTP (CVRWQCB, 2004).

If it is assumed that all of the additional effluent generated by the WWTP at 20 mgd actually reached the lower San Joaquin River on a year-round basis, the total salt load in the WWTP effluent would equal about 8.4 percent of the total load originating from the WWTP watershed and 0.8 percent of the total load in the lower San Joaquin River. Similar proportions would apply for boron. Because of downstream diversions for agricultural use, much of the treated effluent would continue to be applied as irrigation supplies and consumed through evapotranspiration and would not reach the lower San Joaquin River.

Regardless of the potential load that may reach the lower San Joaquin River, these quantities are considered relatively minor and are identified as a low-priority management objective by the RWQCB (CVRWQCB, 2004).

In contrast to the Cities of Modesto and Turlock, whose wastewater effluent reaches the lower San Joaquin River, no waste load allocations have been assigned to the WWTP. Because the CVRWQCB has not established specific waste load allocations for the City's WWTP, a significance determination based on actual quantification is not possible. Further, in the context of the low quantities of salt and boron originating from the WWTP, infrequent connection to the lower San Joaquin River, and a low management priority, the increased salt and boron loadings resulting from the Project would not conflict with achieving the water quality objectives established for the upper San Joaquin River. For these reasons, the impact is considered less than significant.

Mitigation: None required.

Impact 4.2.6: The application of biosolids to lands within and surrounding the City's WWTP property would degrade local groundwater quality. (Less than Significant)

The City currently applies Class B solar dried biosolids to the 580-acre industrial wastewater treatment site south of the WWTP facilities. With the Project, the City would implement improved treatment and handling of biosolids, including improving biosolids thickening with the addition of a new dissolved air flotation thickener, expanded anaerobic digestion facilities, new centrifuge dewatering, and new drying and stabilization to Class A quality solids using active solar dryers, consistent with 40 CFR, Part 503.

The active solar dryers would be used to dry, stabilize, and temporarily store biosolids prior to their being used in areas on-site or hauled offsite. The unlined drying beds currently in use would be abandoned. At 16 mgd, the WWTP would produce approximately 19,700 pounds of solids per day. At 20 mgd, it would produce about 24,667 pounds per day. About 580 acres of the industrial food processing waste disposal facility would continue to be used for the application of treated biosolids. This use would continue to be in compliance with WDR Order No. 97-034 through 2007.

Biosolids would also be disked into areas within the WWTP site. The unlined drying beds currently in use would be converted to fields where biosolids could be disked into soils. Emergency storage basins could also be used for disking biosolids.

The disposal of Class A Biosolids to lands under the City's jurisdiction would comply with 40 CFR, Part 503 or its revisions. The City will ensure that biosolid applications meet the following requirements:

A. The discharge of biosolids to surface waters or surface water drainage courses, wetlands, vernal pools, or significant habitat area will be prohibited.

B. The discharge of irrigation tailwater, stormwater, or other field runoff to surface water following biosolids application will be prohibited for 30 days.

C. Land application of biosolids within any designated floodway or flowage easements designated by the State Reclamation Board or floodways shown on Federal Emergency Management Agency (FEMA) maps will be prohibited.

D. Sludge application rates shall not exceed agronomic rates, or any rates that cause specific constituents to exceed single, annual, or lifetime application limits, based on all of the following: (1) 40 CFR 503, Criteria for Standards for the Use or Disposal of Sewage Sludge or its revisions; (2) Central Valley RWQCB laws and regulations; (3) soil cation exchange rates at the application site; (4) nitrogen demand of the crop; and (5) phytotoxicity of the crop.

E. Biosolids shall be land-spread within 24 hours of their arrival at the site and incorporated into the soil within 24 hours thereafter.

F. Staging areas and sludge application shall be at least:

    1. 25 feet from property lines.

    2. 500 feet from domestic or public water supply wells (wellhead protection area); occupied dwellings; and schools, hospitals, or similar facilities.

    3. 50 feet from non-domestic water supply wells.

    4. 50 feet from public roads.

    5. 100 feet from surface waters, including, but not limited to, creeks, ponds, lakes, vernal pools, marshes, or floodways.

G. Biosolids shall not be applied to soils where the depth to groundwater is less than 5 feet from the soil surface.

H. Biosolids shall not be applied to water-saturated ground or incorporated into its soil during periods of rainfall, when the ground is frozen, or when wind speeds at the site exceed 20 miles per hour. This wind speed requirement may be waived if the sludge or soil has adequate moisture content as determined by the City. In addition, the application and incorporation of sludge shall comply with the local air district regulations including, but not limited to, PM_{10} (particulate matter with a diameter of 10 microns or less) and fugitive dust rules, if applicable.

I. Sludge applications shall be limited to once per crop.

For the purpose of this analysis, it was assumed that the application of Class A biosolids as a soil amendment could also occur on adjacent agricultural properties within a two-mile radius of the WWTP. The application of biosolids to offsite areas would be conducted consistent with Merced County Sludge Disposal Ordinance No. 9.52 or, if the ordinance were not applicable, the provisions prescribed in 40 CFR, Part 503. With the implementation of the prescribed requirements, this impact would be less than significant.

Mitigation: None required.

Impact 4.2.7: Land application of disinfected tertiary treated water would result in the degradation of groundwater quality, and the over-application of disinfected tertiary water could result in direct runoff to surface water. (Less than Significant)

The disinfected tertiary-treated wastewater effluent from the expanded WWTP will meet Title 22 requirements. The WWTP improvements have been designed to produce effluent quality that would comply with the effluent limits anticipated in future WDRs and NPDES permit. Implementation of the Project would result in enabling seasonal irrigation of agricultural lands with disinfected tertiary wastewater. Under the Title 22 reuse standards, all surface runoff from irrigation using treated wastewater must be confined to the water use area, unless the runoff is authorized.

Typical water quality concerns regarding the use of reclaimed water include trace metals, TDS, and nitrates. In the context of these potential contaminants, the release of reclaimed water from future agricultural reuse areas would be inconsistent with allowable practices and regulations.

In the near term, treated wastewater or reclaimed water would be applied only to City-owned land, which includes the 580-acre industrial wastewater management area and the 96 acres of emergency ponds. Over the longer term, the use of land areas for the application of reclaimed water is less defined. However, the City does envision that applications could occur on nearby agricultural lands after the necessary infrastructure is in place.

The City would comply with an approved Title 22 Engineering Report to the Department of Health Services to allow this activity. As a performance standard, the engineering report is required to demonstrate that, at a minimum, uses of reclaimed water do not cause or contribute to:

- Conditions of pollution or nuisance, as defined in Section 13050 of the California Water Code
- Exceedances of any regional, state, or federal numeric or narrative water quality standard

All new users of reclaimed water shall operate reuse facilities in accordance with the engineering report and identify, for the City's approval, the area to be irrigated, the crop(s) to be irrigated, the proposed irrigation rate, and a justification of this irrigation rate, based on the agronomic rate of the crop(s) in question.

The City would also prepare an antidegradation analysis for each discrete discharge area. This analysis would address potential effects on groundwater quality from the discharge, as well as the cumulative effect, considering current farming practices and other waste sources. The analysis would provide the basis for implementing actions to prevent groundwater contamination or exceed applicable water quality standards.

Mitigation: None required.

4.3 Air Quality

4.3.1 Significance Criteria

A project may be deemed to have a significant air quality impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan(s);
- 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 criteria 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; or
- Create objectionable odors affecting a substantial number of people (specifically, more than one confirmed complaint per year averaged over a three-year period, or three unconfirmed complaints per year averaged over a three-year period).

Additionally, the San Joaquin Valley Air Pollution Control District (SJVAPCD) has established thresholds of significance for construction impacts, project operations, and cumulative impacts.

For construction impacts, the pollutant of greatest concern to the district is PM_{10}.[1] The SJVAPCD recommends that significance be based on a consideration of the control measures to be implemented during project construction (SJVAPCD, 2002). Compliance with Regulation VIII, Rule 8011, and implementation of appropriate mitigation measures to control emissions of particulate matter are considered to be sufficient to render a project's construction-related impacts less than significant. The SJVAPCD *Guide for Assessing and Mitigating Air Quality Impacts* contains a list of feasible control measures for construction-related PM_{10} emissions.

The SJVAPCD's guide also includes significance criteria for evaluating operational-phase emissions from direct and indirect sources associated with a project. Direct sources associated with a project emit air pollutants directly into the environment, such as smokestack emissions. Stationary sources (such as generators) that comply, or that would comply, with SJVAPCD rules and regulations are generally not considered to have a significant air quality impact. Indirect sources include motor vehicle traffic associated with a project and do not include stationary sources covered under permits to operate from the SJVAPCD. For this analysis, the Project would be considered to have a significant effect on the environment if it would exceed the following thresholds:

- Cause a net increase in pollutant emissions of reactive organic gases (ROG) or nitrogen oxides (NO_x) exceeding 10 tons per year.

- Cause a violation of state carbon monoxide (CO) concentration standards. The level of significance of carbon monoxide emissions from mobiles sources is determined by modeling the ambient concentration under project conditions and comparing the resultant 1- and 8-hour concentrations to the respective state carbon monoxide standards of 20.0 and 9.0 parts per million.

- Cause "visible dust emissions"[2] due to onsite operations and thereby violate SJVAPCD Regulation VIII.

The operation of any project with the potential to expose sensitive receptors to substantial levels of toxic air contaminants (TACs) would be deemed to have a potentially significant impact. More specifically, proposed development projects that have the potential to expose the public to TACs in excess of the following thresholds would be considered to have a significant air quality impact:

- Cancer risk for the Maximally Exposed Individual[3] increases by at least 10 in one million.

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[1] Construction equipment also emits carbon monoxide and ozone precursors, but the SJVAPCD has determined that these emissions would cause a significant air quality impact only in the case of a very large or very intense construction project (SJVAPCD, 2002).

[2] Visible dust is defined by the SJVAPCD as "visible dust of such opacity as to obscure an observer's view to a degree equal to or greater than an opacity of 40 percent, for a period or periods aggregating more than three minutes in any one hour."

[3] Maximally Exposed Individual represents the worst-case risk estimate, based on a theoretical person continuously exposed for 70 years at the point of highest compound concentration in air.

- Ground-level concentrations of non-carcinogenic TACs would result in a Hazard Index[4] greater than 1 for the Maximally Exposed Individual.

These standards are typically applied to the results of a health risk assessment through a detailed air dispersion modeling effort that uses the U.S. Environmental Protection Agency's (USEPA) Industrial Source Complex-3 or AERMOD model.

Lastly, any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact. Impacts of local pollutants are cumulatively significant when the analysis shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards.

4.3.2 Methodology

The following air quality analysis identifies the types of emissions sources that would be associated with the Project and evaluates their significance. Taking into account such factors as the types and amounts of the different pollutants that would be emitted, the duration of the impact, and the applicable significance criteria. The emissions estimates take into account such factors as fuel types and expected usage rates for different pieces of construction equipment.

Project-related air quality impacts fall into two categories: short-term construction-related impacts and long-term operations-related impacts. Short-term construction activities would primarily result in the generation of ROG, NO_x, and PM_{10}. Short-term construction emissions were calculated with the URBEMIS 2002 Air Pollution Emission Model version 8.7 based on assumptions provided by the SJVAPCD for construction phasing and equipment operation. Long-term operational emission sources include the WWTP facilities, haul truck trips, and the nominal vehicle emissions associated with routine inspection and maintenance of the expanded WWTP. Long-term vehicular criteria pollutant emissions (truck and worker trips) were calculated using the California Air Resources Board's (CARB) EMFAC2002 emissions model (CARB, 2003), and the long-term expanded WWTP facility emissions were estimated by scaling with respect to currently permitted emissions.

On-road motor vehicle emissions for the existing and 20 mgd WWTP levels of operation were estimated, using the CARB EMFAC2002 emission factors and the trip generation information provided in Chapter 2, Project Description. Operational emissions associated with the WWTP and equipment were calculated, based on the current SJVAPCD permits for the permitted 10 mgd WWTP operations and estimated emissions from the 20 mgd WWTP operation.

The permitted 10 mgd WWTP operations were selected to represent existing conditions because the City has obtained all permits and has complied with requirements of CEQA for operating the WWTP at this rated capacity. Because the analysis does not compare the increase in future

[4] The Hazard Index is ratio of a hazardous air pollutant concentration divided by its Reference Concentration, or safe exposure level. If this "hazard index" exceeds one, people are exposed to levels of hazardous air pollutants that may pose noncancer health risks.

operational emission with the 10 mgd WWTP, use of the 10 mgd WWTP provides a conservative estimate of emissions from the WWTP.

The 20 mgd WWTP level of operations was analyzed first to determine if the maximum planned WWTP capacity would have a significant impact; if not, then reduced WWTP capacities would not need to be further addressed.

A dispersion modeling analysis was performed to model TAC emissions associated with the long-term operation of the expanded WWTP. TAC emission sources were quantified, based on the following: additional haul trips associated with biosolids transport, an additional 1,500-kilowatt emergency generator, increases in processing rates at the WWTP, the replacement of the candle flare with an enclosed flare, and the addition of two digestor gas boilers. The Industrial Source Complex-3 model was used to estimate the ambient TAC concentrations that would result from the Project and the associated incremental cancer risk (i.e., the change in cancer risk from the baseline to the future Project conditions).

4.3.3 Impacts and Mitigation Measures

Impact 4.3.1: Construction activities associated with development of the Project would generate short-term emissions of criteria pollutants, including suspended and respirable particulate matter (PM_{10}) and equipment exhaust emissions. (Potentially Significant)

Construction-related emissions arise from a variety of activities including (1) grading, excavation, road building, and other earth-moving activities; (2) travel by construction equipment and employee vehicles, especially on unpaved surfaces; (3) exhaust from construction equipment; (4) architectural coatings; and (5) asphalt paving. These activities would last through 2011, with the most construction activity occurring during 2007.

PM_{10} emissions from construction would vary greatly from day to day, depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within several hundred feet of construction sites and represent more of a soiling nuisance than a health hazard. Smaller-diameter particles (e.g., PM_{10}) are associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture. Therefore, unmitigated construction dust emissions could result in significant local effects. The SJVAPCD recommends that the determination of significance with respect to construction impacts be based not on quantification of emissions and a comparison to thresholds (SJVAPCD, 2002b), but upon the inclusion of feasible control measures for PM10 and compliance with Regulation VIII, Rule 8011of the SJVAPCD's rules and regulations. To comply with Rule 8011, the City would be required to implement provisions of a dust control plan, subject to a review by and the approval of the SJVAPCD.

Compliance with the requirements of Rule 8011 and the implementation of the measures defined in the dust control plan, which requires the integration of optional control measures, would reduce the impacts associated with PM_{10} to a less-than-significant level.

Construction equipment and construction-worker commute vehicles would also generate criteria air pollutant emissions. ROG and NO_x emissions from these sources would incrementally add to the regional atmospheric loading of ozone precursors during construction. For the evaluation of construction impacts, the SJVAPCD does not require a detailed quantification of construction emissions unless the project's indirect source emissions are expected to increase pollutant emissions of ROG or NOx in excess of 10 tons per year (see SJVAPCD Rule 9510). Since Project construction would exceed this threshold in conjunction with SRF requirements for a federal General Conformity analysis, construction emissions were quantified for the project and are provided in Table 4-5.

TABLE 4-5
CONSTRUCTION EMISSIONS ESTIMATES

	Significance Thresholds (Tons per Year)		Unmitigated Construction Emissions[1] (Tons per Year) for the Worst-Case Year (2nd Quarter 2007 Through 1st Quarter 2008)			
Pollutant	**SJVAPCD**	**Federal Conformity**	**Construction - Off-road Equipment[3]**	**Construction - On-road Traffic[4]**	**Total Construction Emissions**	**Significant (Yes/No)?**
ROG/VOC	10	50	5	1	6	No
NO_x	10	50	**36**	3	**39**	Yes
PM_{10}	NA[2]	70	16	1	17	NA
Carbon Monoxide	NA[2]	NA	44	11	55	NA

[1] Values in **bold** exceed the applicable SJVAPCD significance threshold.
[2] NA = Not Available. The SJVAPCD has not established significance thresholds for carbon monoxide or PM_{10}.
[3] Construction equipment emissions were calculated using URBEMIS2002 version 8.7. The types and numbers of equipment entered into the URBEMIS model were determined using the SJVAPCD Recommended Construction Fleet spreadsheet. Please see Appendix F for additional details.
[4] Construction related on-road vehicle emissions were determined using the EMFAC2002 emission factors for truck and construction worker trips. Please see Appendix F for additional details.

Notes: ROG = reactive organic gases; VOC = volatile organic compounds; NO_x = nitrogen oxides; PM_{10} = particulate matter with a diameter of 10 microns or less.

SOURCE: ESA, 2006.

As shown in Table 4-5, Project construction would result in an exceedance of the SJVAPCD and federal conformity thresholds for NO_x emissions. As a result of this exceedance, the City is mandated to comply with the SJVAPCD's Rule 9510, which requires NO_x construction-related emissions reductions of 20 percent, and the payment of fees (as calculated in Rule 9510) to offset NO_x construction emissions that exceed the allowable thresholds. The following measures are examples of actions able to achieve the 20 percent reduction.

- Require construction equipment used at the site to be equipped with catalysts/ particulate traps to reduce particulate emissions. These catalysts/traps require the use of ultra-low sulfur diesel fuel (15 parts per million). Currently, CARB has verified a limited number of these devices for installation in several diesel engine families to reduce their particulate emissions. At the time bids are made, the contractors must show that the construction equipment used is equipped with particulate filters and/or catalysts or prove why it is infeasible.

- Use alternative-fueled construction equipment.
- Replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).
- Require that all diesel engines on the premises be shut off when not in use to reduce the emissions from idling.

Even with a 20 percent reduction in NO_x, Project construction would still generate about 50 tons of NO_x emissions per year. At this level of NO_x emissions, the Project would be consistent with federal general air quality conformity thresholds, but would continue to exceed SJVAPCD thresholds. Therefore, even with compliance with Rule 9510 NO_x reductions, the remaining NO_x emission impact would be continue to be significant.

Mitigation Measure

Measure 4.3.1: The City shall submit fees, consistent with the Rule 9510 offset program, to fund further reductions in regional NO_x emission, enabling the SJVAPCD to implement other programs and actions to reduce NOx emissions in the region.

Impact Significance After Mitigation: Less than significant.

Impact 4.3.2: The Project would result in an increase in operational emissions of criteria air pollutants (ROG, NOx and PM_{10}) and other TACs from on-road motor vehicle traffic traveling to and from the Project area and onsite area sources associated with the Project. (Less than Significant)

Over the operational life of the expanded WWTP, the Project would generate both criteria air pollutants (e.g., NO_x) and TACs. For the purposes of discussion, the analysis of operational impacts to local and regional air quality is divided into criteria air pollutants and TACs. The analysis for each is provided under the associated subheadings below.

Criteria Air Pollutants

Over the long term, Project-related motor vehicle trips and WWTP facility operations would result in an increase in criteria air pollutants. As shown in Table 4-6, criteria air pollutant emissions from current vehicle trips and the 10 mgd WWTP, were subtracted from motor vehicle and WWTP pollutant levels associated with the 20 mgd WWTP operations.

TABLE 4-6
ON-ROAD MOTOR VEHICLE AND WASTEWATER TREATMENT PLANT FACILITY EMISSIONS

	Criteria Air Pollutant Emissions [b] (Tons per Year)			
Scenario	**ROG or VOC**	**NO_x**	**PM_{10}**	**Carbon Monoxide**
20 mgd WWTP – Year 2010 - Motor Vehicle Emissions[a]	0.05	0.1	0.2	1.3
20 mgd WWTP Facility Emissions	7.3	15	0.6	35.6
Existing (10 mgd) – Year 2006 – Motor Vehicle[a]	0.06	0.1	0.2	1.5
Existing (10 mgd) Facility Emissions	9.6	11.9	0.5	32.4
Significance	**Not Significant**	**Not Significant**	**Not Significant**	**Not Significant**

a In order to estimate the worse-case incremental increase in emissions, the existing condition models the haul truck disposal of biosolids onsite (i.e., short trip length), whereas in 2007 and beyond (without the Project), the trucks would haul biosolids to the Forward Landfill in Manteca for disposal. Additional details are included in Appendix F.

b On-road motor vehicle emissions estimates were generated, using EMFAC 2002 emission factors for the year 2006 for the existing scenario, and year 2010 for the 20 mgd WWTP operational rate. WWTP facility and equipment emissions were calculated, based on SJVAPCD permits for the 10 mgd facility and a permit application for a 15 mgd facility. Information in these permits was then used to determine emissions from the 20 mgd facility. Additional details are included in Appendix F.

c SJVAPCD threshold of significance is 10 tons per year of ROG/VOC or NO_x. The Federal Conformity thresholds of significance are 50 tons per year of ROG/VOC or NO_x and 70 tons/year of PM_{10}.

NOTE: **Bold** values exceed applicable standard; ROG = reactive organic gases; NO_x = nitrogen oxides; VOC = volatile organic gases; mgd = million gallons per day; WWTP = wastewater treatment plant; PM_{10} = particulate matter with a diameter of 10 microns or less.

SOURCE: ESA, 2006.

Based on the estimates shown in Table 4-6, the Project's contribution to criteria air pollutant emissions would be below the SJVAPCD and federal conformity significance thresholds for ROG, NO_x and PM_{10} when operating at 20 mgd. Correspondingly, operation of the WWTP at reduced capacities would emit lower volumes of criteria air pollutants. Based on this finding, operation of the WWTP at 12, 16 or 20 mgd would result in less-than-significant long-term air quality impacts.

Toxic Air Containments

The principal issues related to health risks from the project pertain to emissions of TACs from the WWTP, flare, and digester gas boilers and the exhaust from the diesel trucks and emergency generator. The incremental risk was determined for these sources of TACs in order to obtain an estimated total incremental carcinogenic health risk. The TACs of interest include, but not limited to, chloroform, diesel particulate matter (DPM), formaldehyde, benzene, ammonia, and some metals.

Using the toxic potency unit risk factor, as established by Office of Environmental Health Hazard Assessment, the maximum carcinogenic risk of the Project over a 70-year lifetime of exposure from nearby sources is estimated at less than seven cancer cases in a million (at the maximum potentially exposed individual), assuming no reductions in emissions in the future from regulations related to DPM emissions. This level of risk is less that the SJVAPCD's significance threshold of 10 cancer cases per million for a 70-year exposure.

A majority of the potential health risk is attributed to chloroform from the WWTP and DPM emissions from new haul truck trips. However, given projected decreases in DPM emissions as a result of new regulations (approximately 85 percent reductions), the 70-year average lifetime cancer risk for the Project is estimated to be less than the risk associated with current conditions.

In addition, the maximum annual average concentration of DPM from nearby sources is much less than the non-carcinogenic lifetime exposure adjustment (LEA)[5] of 5 $\mu g/m^3$, thus leading to a hazard index of 0.01 as compared to a significance threshold of 1.0. Thus, the impacts of DPM as a result of the Project would be less than significant and minor when compared to current and future cancer risks from exposure to other TAC sources in California.

Four primary factors associated with the Project provide a direct connection to this less-than-significant determination:

- The replacement of the candle flare with an enclosed flare would result in a taller emission source with a greater VOC control efficiency.
- The addition of an ultra-violet light disinfection system in place of the existing chlorine disinfection system would eliminate chloroform emissions.
- The enclosure provided by the new headworks would result in decreased release of VOCs.
- Lastly, phased improvements to haul trucks engines and performance, as mandated by state law, would result in reductions in DPM emissions.

Based these findings, the operational impacts of the expanded WWTP in relation to the generation of TACs are considered less than significant.

Mitigation: None required.

Impact 4.3.3: The Project could create objectionable odors affecting a substantial number of people. (Less than Significant)

The SJVAPCD Guide requires that odor impacts be screened, based on the distance of an emitting facility to nearby sensitive receptors. Wastewater treatment facilities have an odor screening distance of two miles. The closest residence to the Project is north of the Project site on Gove Road at a distance of approximately 1,900 feet. Although there are receptors in the screening distance of the existing and proposed WWTP, the SJVAPCD had not received any past or current formal complaints, as of mid-2006, regarding odors from the operation of the WWTP (SJVAPCD, 2006). The Project would also update the existing head works facility, which is expected to result in a reduction in odors, as well as acquiring lands north and east of the WWTP

[5] The LEA at residential receptors is 1.0.

to facilitate establishing an odor buffer around the site. Therefore, odor impacts would be less than significant.

Mitigation: None required.

4.4 Geology

4.4.1 Significance Criteria

Implementation of the Project would result in significant geological impact if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated in 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 potentially active fault (Refer to Division of Mines and Geology Special Publication 42.)
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction or collapse;

4.4.2 Methodology

The impact assessment uses a qualitative analysis to address soil resources, geologic hazards and primary and secondary effects of earthquakes. Geologic and seismic hazards that, as a result of the implementation of the Project, would expose people to injury and infrastructure to damage were considered in terms of an adverse impact to public safety. Available information sources were used to characterize the seismic risk and geologic hazards in the vicinity of the WWTP.

The Project features were evaluated in terms of the identified levels of significance and whether the impacts were considered less than significant or significant. Potential water quality impacts caused by erosion and resulting sedimentation are described and addressed in Section 4.2, Water Quality. Section 4.2 also provides an analysis of local impacts to groundwater quality in response to the City's biosolids disposal program.

4.4.3 Impacts and Mitigation Measures

Impact 4.4.1: In the event of a major earthquake in the region, seismic ground shaking could cause collapse or structural damage to the WWTP and associated facilities. Structural damage to Project components resulting from substantial displacement along various fault sources could indirectly result in significant injury to people and disruption of major services (e.g., sanitary sewer). (Less than Significant)

Most structures, including buildings, roads, bridges, paved areas, containment facilities, and buried pipelines, are potentially subject to damage from earthquakes. Ground shaking is an unavoidable hazard for facilities in the San Francisco Bay and San Joaquin/Sacramento Valley region. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude, and the duration of shaking. Ground shaking within the Project area could cause significant damage to structures if they are not constructed in accordance with California Building Code (CBC) requirements for Seismic Zone 3.

New facilities associated with the Project would likely be subject to the effects of at least one major earthquake during the Project's operational life. Based on calculations preformed by the City's geotechnical engineer, the peak ground acceleration (PGA) with a 10 percent probability of exceedance in 100 years is 0.22 g (BSK, 2005). This level of seismic shaking is less than that of areas along the coast, which are expected to experience a much higher PGA. Nonetheless, damage to the structural elements of the Project and to the machinery or injuries to workers from a seismic event could result in a temporary cessation of facility operations. Structural damage to new pipelines and pipe joints, due to their buried nature, would be expected to be less than the damage to aboveground structures.

These hazards are unavoidable, but measures to reduce the hazard to an acceptable level of risk would be implemented as part of the Project. Per Title 24 CCR, the City is required to have a licensed geotechnical engineer perform a geotechnical investigation for each structural component of the Project. These procedures are consistent with Policies 2.1c and 2.1g of the City's General Plan. The recommendations of the investigation would be integrated in the structural design of the Project. Additionally, the Project would be constructed in accordance with applicable (2001) CBC regulations for areas in Seismic Risk Zone 3. The implementation of these required measures would reduce the potential for injury and the length of service interruptions during and after a seismic event and ensure a less-than-significant impact.

Mitigation: None required.

Impact 4.4.2: The Project area could be subjected to geologic hazards, including liquefaction, differential settlement, total settlement, and minor slumping along Hartley Slough. (Less than Significant)

Seismic hazards related to ground shaking could occur in the Project area. Liquefaction of localized unconsolidated sand deposits in areas of high groundwater could result in lateral spreading and

settlement of soils beneath the pipeline and associated above-grade structures (e.g., aeration facility). However, based on the subsurface investigation conducted by the City's geotechnical engineer, the potential for liquefaction is considered low (BSK, 2005). Nonetheless, there remains a small risk of seismically induced ground settlement of non-saturated soils, which could result in breakage of pipes and underground power conduits.

As previously indicated in the discussion of Impact 4.4.1, hazards associated with ground shaking are considered unavoidable; however, compliance with the requirements in Title 24 CCR would reduce the level of these hazards to an acceptable level of risk. Pending final design of the expanded WWTP, a licensed geotechnical engineer would confirm the relative susceptibility of the proposed structures to liquefaction, total settlement, and/or differential settlement. The recommendations of the final geotechnical report would be integrated into the structural design of each component and would reduce the potential for injury and the length of service interruptions during and after a seismic event. For these reason, the impact is considered less than significant.

Mitigation: None required.

4.5 Soils

4.5.1 Significance Criteria

Implementation of the Project would result in significant soil resource impact if it would:

- Be located on expansive soil creating substantial risks to life or property.
- Contain corrosive qualities that could threaten the structural integrity of structures or subsurface construction.

4.5.2 Impacts and Mitigation Measures

Impact 4.5.1: The presence of expansive and corrosive soils could result in structural damage to the proposed pipeline and associated facilities. (Less than Significant)

Typically, soils that exhibit expansive characteristics comprise the upper five feet of the surface. The effects of expansive soils could damage foundations of aboveground structures, paved roads and streets, and concrete slabs. Expansion and contraction of these soils, depending on the season and the amount of surface water infiltration, could exert enough pressure on structures to result in cracking, settlement, and uplift. The City's geotechnical engineer has identified moderately expansive native soil materials onsite (BSK, 2005). The main limitations of these expansive soil materials are difficulties in achieving efficient compaction and reduced load capacity during excavation. Standard engineering recommendations are included in the project's geotechnical report and would be implemented as part of the facility's construction to mitigate these hazards.

Similarly, the geotechnical investigation identified shallow groundwater across the Project site, which could be potentially corrosive to buried structures (BSK, 2005). However, through the incorporation of standardized engineering practices, corrective recommendations are included in the geotechnical report to address this issue. With this understanding, any impacts associated with expansive and/or corrosive soil materials would be solved through standardized engineering practices and the resulting impact is considered less than significant.

Mitigation: None required.

4.6 Vegetation

4.6.1 Significance Criteria

Based on CEQA Guidelines Section 15065 and Appendix G, as well as professional judgment, the Project would result in a significant impact on the environment if it would:

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Threaten to eliminate a plant community.

4.6.2 Methodology

This analysis is based upon field reconnaissance of the Project study area, literature searches, and database queries. The sources of reference data reviewed for this assessment included the following:

- California Natural Diversity Database (CNDDB), Rarefind 3 computer program for the following USGS quadrangles: Sandy Mush, Arena, Atwater, El Nido, Bliss Ranch, Merced, Turner Ranch, Delta Ranch, and Santa Rita Bridge (CNDDB, 2005)
- CDFG, *State and Federally Listed Endangered, Threatened, and Rare Plants of California, July 2005* (CDFG, 2005b)
- CDFG, *Vascular Plants, Bryophytes, and Lichens List, July 2005* (CDFG, 2005c)
- California Native Plant Society (CNPS), Electronic Inventory computer program for the following 7.5-minute USGS quadrangles: Sandy Mush, Arena, Atwater, El Nido, Bliss Ranch, Merced, Turner Ranch, Delta Ranch, and Santa Rita Bridge (CNPS, 2005)
- U.S. Fish and Wildlife Service (USFWS), Plant Species of Concern (USFWS, 2005b)
- U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles: Sandy Mush, California (USGS, 1963) and Atwater, California (USGS, 1987)

The impact analysis focuses on foreseeable changes to the baseline condition in the context of the significance criteria presented above. In conducting the following impact analysis, three principal components of the Guidelines outlined above were considered:

- Magnitude of the impact (e.g., substantial/not substantial)
- Uniqueness of the affected resource (i.e., rarity of the resource)
- Susceptibility of the affected resource to perturbation (i.e., sensitivity of the resource)

The evaluation of the significance of the following impacts considered the interrelationship of these three components. For example, a relatively small magnitude impact to a state or federally listed species would be considered significant because the species is very rare and is believed to be very susceptible to disturbance. Conversely, a plant community such as California annual grassland is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be required to result in a significant impact.

4.6.3 Impacts and Mitigation Measures

Impact 4.6.1: Construction and/or operation of the Project would conflict with local policies or ordinances for protecting biological resources. (Potentially Significant)

Project development could potentially impact habitat for native, rare, and threatened species. Construction activities may cause soil erosion, which could potentially affect surface water quality. These impacts would be inconsistent with the following City's open space policies as stated in the Merced Vision 2015 General Plan (Merced County, 1990): OS-1.1 (Identify and preserve wildlife habitat which support rare, endangered, or threatened species) and OS-1.2 (Preserve and enhance creeks in their natural state throughout the planning area) Also refer to the discussion of potential impact presented in Section 4.13.1 and 4.13.2.

Mitigation Measures

Implementation of **Mitigation Measure 4.2.1a** will reduce potential impacts from soil erosion to less than significant.

Measure 4.6.1a: The City shall avoid spreading invasive plants that could impact biological resources in the Project area. The City will ensure that all fill material brought onto the Project area from offsite shall be from weed-free sources. The upland filled areas and upland areas disturbed by grading and excavation activities will be revegetated with appropriate native species to discourage the colonization of invasive plants in the Project study area.

All seed for revegetation shall consist of 100 percent native plant species. The seed mix shall be premixed and packaged by a commercial seed supplier, labeled in accordance with the California Agricultural Code; shall be delivered to the site in original, unopened containers, and shall bear a dated guaranteed analysis.

Measure 4.6.1b: The City shall avoid unnecessary disturbance to native vegetation. In order to avoid and minimize potential impacts from trampling established vegetation communities, construction activities will be limited to designated staging areas, construction footprints, and construction easements. These areas shall be reseeded with native plants (as prescribed in Mitigation Measure 4.6.1a).

Impact Significance After Mitigation: Less than significant.

Impact 4.6.2: The Project would jeopardize or eliminate plant and wildlife habitats. (Less than Significant)

Excluding already developed areas, the Project would temporarily alter 3.4 acres of various habitats and permanently displace 30.0 acres of various vegetation and habitats. Table 4-7 identifies the acreage of plant communities that would be affected. None of these communities is unique or limited to the Project area.

TABLE 4-7
VEGETATION AND HABITATS AFFECTED
BY WASTEWATER TREATMENT PLANT EXPANSION

(Perhaps title could be changed to Undeveloped Habitats and several categories below deleted)

Habitat	Total in Project Area	Permanently Affected	Temporarily Affected
Annual Grassland	24.1	--	--
Alkali Scrub	48.0	--	--
Eucalyptus	20.6	0.4	0.5
Fresh Emergent Wetland	8.0	0.03	0.10
Seasonal Wetland	2.7	0.02	--
Riverine	2.1	--	--
Drains and Channels	5.1	3.1	0.1
Ruderal	7.7	0.4	0.2
Disked Field	35.0	26.0	2.4
Landfill	3.75	--	--
Subtotal	**157.0**	**30.0**	**3.4**
Developed Area	113.5	39.2	18.3
Total	**270.6**	**69.1**	**21.7**

SOURCE: ESA, 2006

Vegetation and habitats that are regulated by statute (i.e., waters of the U.S. and riparian lands) are discussed separately in Section 4.14 of this document. In addition, vegetation and habitats that may support special-status species are addressed in Section 4.13 of this document. Both of these discussions present mitigation for potential significant impacts that may result from Project implementation.

The remaining vegetation and habitat identified in Table 4-7 is common and abundant in this region of California. Potential impacts to these vegetative communities and habitats are not considered to be significant.

Mitigation: None required.

4.7 Fish and Wildlife

4.7.1 Significance Criteria

Based on CEQA Guidelines Section 15065 and Appendix G, as well as professional judgment, the Project would result in a significant impact on the environment if it would:

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory native wildlife corridors, or impede the use of wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources;
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan;
- Substantially reduce the habitat of a fish and wildlife species;
- Cause a fish or wildlife population to drop below self-sustaining levels; or
- Threaten to eliminate an animal community.

4.7.2 Methodology

This analysis is based upon field reconnaissance of the Project study area, literature searches, and database queries. The sources of reference data reviewed for this assessment included the following:

- CNDDB, Rarefind 3 computer program for the following USGS quadrangles: Sandy Mush, Arena, Atwater, El Nido, Bliss Ranch, Merced, Turner Ranch, Delta Ranch, and Santa Rita Bridge (CNDDB, 2005)
- CDFG, State and Federally Listed Endangered and Threatened Animals of California, July 2005 (CDFG, 2005a)
- USFWS, List of Federal Endangered and Threatened Species that may be Affected by Projects in the "Sandy Mush and Atwater" 7 ½ Minute Quadrangles (USFWS, 2005a)

- USGS 7.5-minute topographic quadrangles: Sandy Mush, California (USGS, 1963) and Atwater, California (USGS, 1987)

The impact analysis focuses on foreseeable changes to the baseline condition in the context of the significance criteria presented above. In conducting the following impact analysis, three principal components of the CEQA Guidelines outlined above were considered:

- Magnitude of the impact (e.g., substantial/not substantial)
- Uniqueness of the affected resource (i.e., rarity of the resource)
- Susceptibility of the affected resource to perturbation (i.e., sensitivity of the resource)

The evaluation of the significance of the following impacts considered the interrelationship of these three components. For example, a relatively small magnitude impact to a state or federally listed species would be considered significant because the species is rare and is believed to be susceptible to disturbance. Conversely, an animal community such as the common raccoon is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be required to result in a significant impact.

4.7.3 Impacts and Mitigation Measures

Impact 4.7.1: The expansion of the WWTP would impede or interfere with the regional movement or migration of wildlife species in the area. (No Impact)

The Project would not create a physical barrier or impediment that would impede or interfere with the movement or migration of wildlife species, including terrestrial, aquatic, or avian species because no new facilities would be constructed that have the capacity to interrupt or impede the movement or migration of wildlife in the area. Major physical improvements to the WWTP would be limited to treatment facilities located onsite, levees of moderate height, and road access to the WWTP property. None of these improvements would interfere with wildlife movement or migration.

Mitigation: None required.

Impact 4.7.2: Expansion of the WWTP would create new ponds or water bodies that would attract waterfowl. (No Impact)

The Project would not create new ponds or surface water bodies that would attract waterfowl or other avian species. The Project would not alter existing ponds or treated effluent supplies that maintain the Merced Wildlife Management Area.

Mitigation: None required.

Impact 4.7.3: Proposed improvements to the WWTP treatment process would increase effluent volume and produce higher quality effluent, and thus, changes to Hartley Slough aquatic species could occur as effluent quantity increases and quality improves. (Less than Significant)

The Project would increase the effluent discharge to Hartley Slough to almost double the current amount. This increase may affect fish and other aquatic species. Based on the macroinvertebrate sampling results from August and December 2005, it appears that conditions immediately upstream of the current outfall in Hartley Slough are rated as "good" or as having some organic pollution, as determined by Hilsenhoff's Field Biotic Index (Fox, 2005). Immediately downstream of the current outfall, the Field Biotic Index rating is only "fair," which suggests a fairly significant amount of organic constituents in the surface water. A possible explanation for the difference between these two ratings may reflect the effluent outfall contributions.

Currently, the secondary-treated effluent is discharged into Hartley Slough. With implementation of the Project, the effluent discharged would be higher quality tertiary-treated effluent. See Section 4.2, Water Quality, for more details on water quality impacts. Although the volume of flow would increase in the slough, the water velocity is not likely to significantly increase because of downstream hydraulic controls (see Section 4.1, Water Quantity). The tertiary-treated effluent should be of higher quality than that of the secondary-treated effluent, increasing the water quality within Hartley Slough when compared to the existing conditions.

The populations of various aquatic macroinvertebrates in Hartley Slough may change in composition and density. Those species that prefer higher dissolved oxygen and lower organic constituents are expected to increase in abundance while others that prefer lower dissolved oxygen and higher organic constituents may decline.

The anticipated beneficial changes in water quality would not have an adverse impact on aquatic species and habitats. A new species mix is expected to become established corresponding to the improved water quality as influenced by the WWTP discharge.

Mitigation: None required.

4.8 Aesthetics

4.8.1 Significance Criteria

The Project would result in a significant impact to aesthetic resources if it would:

- 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 visual character or quality of the site and its surroundings
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

4.8.2 Methodology

This analysis for visual resources used three key steps: (1) identifying the visual character and quality; (2) identifying the type, exposure, and sensitivity of viewers; and (3) identifying the potential change in visual resources. All three of these elements were considered when determining the level of visual impact resulting from the Project. The actual impacts of the Project would be determined based on changes to the baseline conditions in the context of the applied significance criteria.

4.8.3 Impacts and Mitigation Measures

Impact 4.8.1: The Project would adversely affect a scenic vista or scenic resources within a state scenic highway or a city scenic corridor. (No Impact)

The Project area does not include any vistas or roadways designated as scenic by the state or local General Plans (City of Merced, 1997; County of Merced, 2000). The Project area is generally flat and the only visible topographic features from the Project site are the distant Sierra Nevada, which begin approximately 30 miles east and the Coast Range, which are over 40 miles west. In addition, Project construction would not obstruct a public view, scenic vista, or significant feature, or create an aesthetically offensive public view. Therefore, the Project would have no impact on a scenic vista or roadway.

Mitigation: None required.

Impact 4.8.2: The Project would modify the visual character of the Project area. (Less than Significant)

The Project would involve the construction of facilities for expanding water treatment capacity. To accommodate the new facilities, the Project would acquire 46 acres of land immediately north and east of the WWTP and develop and utilize 20 acres for WWTP purposes. This land would be used for the expansion of the WWTP's new headworks and for odor control. New levees similar to the levees found at the WWTP would also be constructed around the WWTP facilities.

The visual setting of the immediate area consists of paved and dirt roadways, irrigated pasture Travelers and residents near the Project site would be able to view the construction of the expanded facilities. However, these views would generally be of short duration, until construction is completed and the site is restored.

The area is characterized by low to moderate visual interest, with the WWTP being the dominant feature in the area; therefore, changes to the visual character would be minimal. The potential impact on visual character is considered less than significant.

Mitigation: None required.

Impact 4.8.3: The Project would create new sources of daytime glare and/or nighttime illumination. (Potentially Significant)

The Project would include the installation of additional permanent lighting fixtures (e.g., security lights) for the expanded WWTP facilities. In addition, it is plausible that construction operations during evening hours could employ mobile lighting equipment that would generate limited nighttime illumination. However, because there are no sensitive receptors in the vicinity of the WWTP, no significant impacts are expected from such temporary lighting equipment. Additionally, mobile lighting equipment would be directed toward the construction site and away from any residences or public roadways. Therefore, temporary impacts of nighttime illumination for the Project are considered less than significant with the implementation of Mitigation Measure 4.8.3.

During construction, daytime glare may increase with the introduction of equipment and construction materials that may add to glare on the WWTP site. This increase would be temporary and limited to the construction period and minor because of the degree of equipment and materials onsite associated with the ongoing operation of the WWTP. The Project would have a less-than-significant impact on daytime glare at the WWTP site.

Mitigation Measure

> **Measure 4.8.3:** The City shall install security lighting with directional shields to concentrate lighting toward the Project site. The nighttime security and associated parking lighting fixtures will be equipped with directional shields that aim light downward and away from adjacent properties and public roadways. In addition, lighting fixtures will be placed to concentrate light onsite to avoid spillover onto adjacent properties and public roadways.
>
> **Impact Significance After Mitigation:** Less than significant.

4.9 Noise

4.9.1 Significance Criteria

The Project would result in a significant impact if it would:

- Expose persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance or in the applicable standards of other agencies

- Expose persons to or generate excessive groundborne vibration or groundborne noise levels

- Result in a substantial permanent increase in ambient noise levels in the Project vicinity substantially above levels existing without the Project and in excess of standards established in the local General Plan or noise ordinance or in the applicable standards of other agencies

- Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity substantially above levels existing without the Project and in excess of standards established in the local General Plan or noise ordinance or in the applicable standards of other agencies

Additionally, as described in Tables 3-9 and 3-10 of this document, the Merced County General Plan and Noise Ordinance specify the following significance criteria for changes in noise from Project operations:

- A resulting noise level at any residential receptor property line that exceeds 55 dBA Leq in the daytime (7 a.m. to 10 p.m.) or 45 dBA Leq in the nighttime (10 p.m. to 7 a.m.)

- A resulting offsite noise level that exceeds the background noise level by 10 dBA in the daytime (7 a.m. to 10 p.m.) or by 5 dBA in the nighttime (10 p.m. to 7 a.m.)

4.9.2 Impacts and Mitigation Measures

Impact 4.9.1: Project construction would temporarily increase noise levels at nearby sensitive receptor locations. (Potentially Significant)

Construction activity noise levels at and near the WWTP would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. Table 4-8 shows typical noise levels during different construction stages and those produced by various types of construction equipment.

Construction of the Project could generate significant noise, corresponding to the particular phase of building construction and the noise-generating equipment used during construction. The closest sensitive receptor to the Project site is to the north on Gove Road. Other sensitive receptors in the Project area would be exposed to construction noise at incrementally lower levels.

Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of distance. The residence north of the Project site on Gove Road would be approximately 1,900 feet from Project construction. Assuming an attenuation rate of 6 dBA per doubling of distance, this residence would experience noise levels of 57 dBA Leq during excavation and finishing activities, the loudest of the construction phases that would occur. Back-up beepers associated with trucks and equipment used for material loading and unloading at the Project site would generate significantly increased noise levels over the ambient noise environment. Construction noise would be greater than the noise levels at the sensitive receptor on Gove Road.

TABLE 4-8
TYPICAL NOISE LEVELS FROM CONSTRUCTION ACTIVITIES AND CONSTRUCTION EQUIPMENT

Construction Phase	Noise Level[a] (dBA, Leq)	Construction Equipment	Noise Level[a] (dBA, Leq at 50 Feet)
Ground clearing	84	Dump truck	88
Excavation	89	Portable air compressor	81
Foundations	78	Concrete mixer (truck)	85
Erection	85	Scraper	88
Finishing	89	Jackhammer	88
		Dozer	87
		Paver	89
		Generator	76
		Backhoe	85

[a] Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: Bolt, Baranek, and Newman, 1971; Cunniff, 1977.

Construction activities associated with the Project would be temporary in nature and related noise impacts would be short term. However, although construction activities would occur when a majority of people are at work, retired persons, people who work at home, and homemakers could be significantly affected by noise when construction activities occur in the immediate vicinity. In addition, construction-related material haul trips and vehicle traffic to and from construction sites would raise ambient noise levels along construction haul routes. Compliance with the Merced County Noise Regulations (Tables 3-9 and 3-10) and implementation of Measure 4.9.1 would reduce impacts to less than significant.

Mitigation Measure

Measure 4.9.1: The applicant shall implement the following measures:

- Construction activities shall be limited to between 7 a.m. and 10 p.m. Monday through Saturday to avoid noise-sensitive hours of the day. Construction activities shall be prohibited on Sundays and holidays.

- Construction equipment noise shall be minimized by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools.

- Construction contractors shall locate fixed construction equipment (such as compressors and generators) and construction staging areas as far as possible from nearby residences.

Impact Significance After Mitigation: Less than significant.

Impact 4.9.2: Project operational activities associated with traffic and WWTP equipment operation could increase ambient noise levels at nearby land uses. (Less than Significant)

Operational activities associated with the Project that would generate noise include maintenance vehicle circulation and the operation of certain mechanical equipment such as stationary pumps, fans, and generators.

Operational vehicle trips in the vicinity of the WWTP would increase as a result of additional WWTP operator vehicle trips, delivery of materials and chemicals to the WWTP, and disposal of biosolids at nearby agricultural disposal areas. As discussed in Chapter 2, Project Description, local trips would increase up to 10 trips per day, consisting of about six WWTP operator commuting trips and three biosolid truck disposal trips. An additional trip for delivery of materials is also anticipated. This increase in trips would not generate a substantial increase in noise along local roadways.

Operation of stationary pumps, fans, and any other mechanical equipment would be the primary noise sources at the expanded WWTP. This equipment would be enclosed, shielded, or located within the WWTP interior to minimize noise increase at the WWTP property boundary and not exceed ambient noise increases by more than 5 dBA. The resulting noise impact associated with WWTP operations would be less than significant.

Mitigation: None required.

4.10 Recreation

4.10.1 Significance Criteria

The Project would result in a significant impact to recreational resources if it would:

- Increase the use of 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 that might have an adverse physical effect on the environment

4.10.2 Methodology

The approach used to analyze the Project's recreational impacts was to identify the changes to recreational resources expected to result from Project implementation and to evaluate the significance of such changes when weighed against the environmental baseline.

4.10.3 Impacts and Mitigation Measures

Impact 4.10.1: The Project would result in an increase in visitor use of neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. (No Impact)

The expansion of the WWTP would create a limited amount of additional job opportunities, aside from temporary construction jobs, and would not attract outside visitors to the Project area. Additionally, and as described further in Chapter 6, Growth-Inducing Impacts, no unplanned growth would occur from Project implementation. For these reasons, the Project would not directly increase the use of parks or other recreational facilities such that physical deterioration of the facility would occur or be accelerated. Therefore, no impact would occur. Indirect effects of the Proposed Project are discussed in Chapter 6.

Mitigation: None required.

Impact 4.10.2: The Project would substantially disrupt or conflict with the use of recreational facilities to the extent that it would affect the recreational value of such facilities. (No Impact)

Access to the Merced Wildlife Management Area, which lies south of the WWTP and is part of the Merced National Wildlife Refuge, would be maintained to allow permitted hunting within the wildlife area. Provisions are planned as part of the design for the expanded WWTP to enable continued public access to the refuge using Gove Road past the WWTP site. Therefore, impacts to recreational facilities are considered less than significant.

Mitigation: None required.

4.11 Open Space

4.11.1 Significance Criteria

The Project would be considered to have a significant impact on open space if it would result in any of the following:

- Loss of open space that supports or maintains protected environmental resources, such as special-status species habitat, important farmland, or other important resource

- Conflicts with applicable policy for managing open space or other open space maintenance agreement or easement

- Loss of open space that acts as a buffer and results in a conflict between adjacent land uses

4.11.2 Methodology

The analysis of the Project's open space impacts is based on the above significance criteria in the context of the Project area. The approach used to analyze the impacts of the Project on open space was to compare the changes resulting from Project implementation with the environmental baseline.

4.11.3 Impacts and Mitigation Measures

Impact 4.11.1: The Project would displace about 20 acres of open space currently in an agricultural land use. (Potentially Significant)

As shown on Figure 2-4, the expansion of the WWTP would extend north and east of the WWTP site boundaries and encompass about 20 acres of agricultural land. The land would be occupied by new WWTP facilities and the levee protecting the site from flooding. The loss of 20 acres of Important Farmland, as noted in Section 4.14, Environmentally Sensitive Areas, would be a potentially significant impact. This loss is considered significant and unavoidable, even with measures to acquire and protect equal acreage in an agricultural land use.

Mitigation Measure

Measure 4.11.1: Implementation of Mitigation Measure 4.14.1 will reduce potential impacts from loss of agricultural lands.

Impact Significance After Mitigation: Significant and unavoidable.

Impact 4.11.2: The Project would conflict with an existing policy for managing open space or other agreement/easement for open space protection. (No Impact)

The Project would not conflict with an existing policy for managing open space or other agreement or easement for open space protection. No specific open space areas have been designated or are being managed in the immediate vicinity of the WWTP site. No impact would occur to open space management.

Mitigation: None required.

Impact 4.11.3: The Project would result in the loss of open space that acts as a buffer and could result in a conflict between adjacent land uses. (No Impact)

The open space land that would be made part of the WWTP site does not act as a buffer between conflicting land uses. All land uses surrounding the WWTP site consist of agricultural production uses. The Project would have no impact on displacing open space that acts as a buffer between conflicting land uses.

Mitigation: None required.

4.12 Cultural Resources

4.12.1 Significance Criteria

The Project would be considered to have a significant impact on cultural resources if it would result in any of the following:

- A substantial adverse change in the significance of a historical resource that is either listed or eligible for listing on the National Register of Historic Places, the California Register of Historic Resources, or a local register of historic resources
- A substantial adverse change in the significance of a unique archaeological resource
- Disturbance or destruction of a unique paleontological resource or site or unique geologic feature
- Disturbance of any human remains, including those interred outside formal cemeteries

4.12.2 Methodology

A cultural resources records search of all pertinent survey and site data was conducted at the Central California Information Center, California State University, Stanislaus, on December 19, 2005 (CCIC # 6034I). The records were accessed by reviewing the USGS 7.5-minute quadrangle maps for Atwater, El Nido, Merced, and Sandy Mush and included the Project area and the land within a one-quarter-mile radius around the Project site. Other sources that were reviewed included the Directory of Properties in the Historic Property Data File for Sacramento County, the National Register of Historic Places, the California Register of Historic Resources, the California Inventory of Historic Resources (1976), the California Historical Landmarks (1996), and the California Points of Historical Interest (1992).

The Native American Heritage Commission (NAHC) was contacted by an ESA archaeologist on January 24, 2006, and asked to provide information on locations of importance to Native Americans in the Project area and a list of Native Americans who should be contacted. The NAHC provided a list of three Native American organizations. A letter sent to the three organizations provided information about the Project and requested information on locations of importance to Native Americans. No responses have been received to date.

An archaeological field inspection of the Project area was conducted in January 2006 by a registered professional archaeologist. The surface of the Project area was inspected by using systematic survey transects spaced between 15 and 30 meters apart in areas of good surface visibility and a cursory survey in paved or otherwise covered portions of the Project site. The pavement and heavy vegetation cover reduced the visibility of the surface over large portions of the Project site. Areas of visible surface, especially along the river bank, were examined for evidence of archaeological remains such as artifacts, bone, features, or culturally modified soil horizons.

Available literature and records were reviewed to determine the potential to encounter paleontological remains at the WWTP site, vicinity, or general area. Records reviewed included online records of the University of California's Museum of Paleontology.

4.12.3 Impacts and Mitigation Measures

Impact 4.12.1: The Project would cause adverse effects to unknown historical resources, including unique archaeological resources. (Potentially Significant)

No cultural resources have been identified within the Project area as a result of any cultural resource surveys. Additionally, a thorough investigation of the site by a qualified archeologist also yielded no evidence of cultural resources. However, this does not conclusively demonstrate the absence of subsurface cultural resources on the Project site. Traditional foot survey methods are constrained by variations in the natural landscape, such as grass and brush cover and agricultural tilling that can obscure surface evidence. Grading and other construction-related activities could cause significant impacts to the scientific value of the historical resources, unique archaeological resources, or traditional cultural properties that may be in the Project area. With the implementation of Mitigation Measure 4.12.1, this impact would be less than significant.

Mitigation Measure

> **Measure 4.12.1:** In the event of the accidental discovery of cultural resources, such as structural features or unusual amounts of bone or shell, artifacts, human remains, architectural remains (such as bricks or other foundation elements), or historic archaeological artifacts (such as antique glass bottles, ceramics, etc.), work will be suspended and City staff will be contacted.
>
> A qualified cultural resource specialist will be retained and will perform any necessary investigations to determine the significance of the find. The City will then implement any mitigation deemed necessary for the recordation and/or protection of the cultural resources.

In considering any suggested mitigation proposed by the consulting archaeologist to mitigate impacts to historical resources or unique archaeological resources, the Project proponent will determine whether avoidance is feasible in light of the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) will be instituted. Work may proceed on other parts of the Project site while the mitigation for historical resources or unique archaeological resources is carried out.

In addition, pursuant to Sections 5097.97 and 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code, in the event of the discovery of human remains, all work will be halted and the County Coroner will be immediately notified. If the remains are determined to be Native American, their treatment and disposition will adhere to the NAHC guidelines.

Impact Significance After Mitigation: Less than significant.

Impact 4.12.2: The Project would cause adverse effects on unknown paleontological resources. (Potentially Significant)

The Project area contains mostly recent (Holocene) alluvial floodplain soils and surface deposits underlain by bedrock layers, which may yield deposits of ancient marine shell and other highly common accumulations of ancient life found in certain bedrock layers. However, these areas are less likely to harbor paleontological resources that would qualify as significant, in terms of scientific importance, for the purposes of CEQA (CEQA Guidelines 15064.5(a)(3)).

Available records indicate that paleontological resources are associated with deposits and materials laid during Quaternary period. Resources have been found along active river channels, such as the Merced River, which has eroded downward to the older geologic materials and exposed fossil remnants (UCMP, 2006). There are no similar water features present in the Project area.

Nevertheless, significant fossil discoveries can be made, even in areas designated as having a low potential for such resources and could result from deeper excavation activities related to the Project. Excavation activities associated with the Project may extend to depth of 10 to 12 feet below the ground surface and can have a deleterious effect on such resources. This impact would be reduced to a less-than-significant level with the incorporation of Mitigation Measure 4.12.2.

Mitigation Measure

Measure 4.12.2: The City shall notify a qualified paleontologist of unanticipated discoveries, in order to document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in Section 15064.5 of the CEQA Guidelines. In the event a fossil is discovered during construction, activities that could potentially affect the find will be temporarily halted or diverted until the discovery is examined by a qualified paleontologist, in accordance with Society of Vertebrate Paleontology standards. The paleontologist will notify City to determine procedures to be followed before construction is allowed to resume at the location of the find. If the City

determines that avoidance is not feasible, the paleontologist will prepare an excavation plan for mitigating the effect of the Project on the qualities that make the resource important, and the plan will be implemented. The plan will be submitted to the City for review and approval.

Impact Significance After Mitigation: Less than significant.

4.13 Threatened and Endangered Species

4.13.1 Significance Criteria

Based on CEQA Guidelines Section 15065 and Appendix G, as well as professional judgment, the Project would result in a significant impact on the environment if it would:

- 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 CDFG or USFWS; or

- Substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

4.13.2 Methodology

This analysis is based upon field reconnaissance of the Project study area, literature searches, and database queries. The sources of reference data reviewed for this assessment included the following:

- CNDDB, Rarefind 3 computer program for the following USGS quadrangles: Sandy Mush, Arena, Atwater, El Nido, Bliss Ranch, Merced, Turner Ranch, Delta Ranch, and Santa Rita Bridge (CNDDB, 2005)

- CDFG, State and Federally Listed Endangered and Threatened Animals of California, July 2005 (CDFG, 2005a)

- CDFG, State and Federally Listed Endangered, Threatened, and Rare Plants of California, July 2005 (CDFG, 2005b)

- CDFG, Vascular Plants, Bryophytes, and Lichens List, July 2005 (CDFG, 2005c)

- CNPS, Electronic Inventory computer program for the following 7.5-minute USGS quadrangles: Sandy Mush, Arena, Atwater, El Nido, Bliss Ranch, Merced, Turner Ranch, Delta Ranch, and Santa Rita Bridge (CNPS, 2005)

- USFWS, List of Federal Endangered and Threatened Species that may be Affected by Projects in the "Sandy Mush and Atwater" 7.5-minute quadrangles (USFWS, 2005a)

- USFWS, Plant Species of Concern (USFWS, 2005b)
- USGS 7.5-minute topographic quadrangles: Sandy Mush, California (USGS, 1963) and Atwater, California (USGS, 1987)

Appendix G to this EIR presents a biological assessment addressing potential effects of the project on federally designated species consistent with the requirements of Section 7 of the federal Endangered Species Act.

4.13.3 Impacts and Mitigation Measures

Impact 4.13.1: Construction of the Proposed Project could result in impacts to the following special-status species: valley elderberry longhorn beetle, blunt-nosed leopard lizard, giant garter snake, Swainson's hawk, greater sandhill crane, and San Joaquin kit fox. (Potentially Significant)

The Project study area provides potential habitat for several threatened and endangered animal species, including valley elderberry longhorn beetle, blunt-nosed leopard lizard, giant garter snake, Swainson's hawk, greater sandhill crane, and San Joaquin kit fox. Construction and/or operation of the Project may affect these species and their habitats by incidentally taking a species, potentially jeopardizing the viability of a population, loss of habitat, harassment, interference with movement/migration, or disruption of reproductive activities.

Impact 4.13.1a: Valley Elderberry Longhorn Beetle. Surveys of the Project study area identified 30 elderberry shrubs (*Sambucus mexicana*) that meet the definition of valley elderberry longhorn beetle (VELB) habitat (Figure 3.3-2, Appendix D). The USFWS describes direct and indirect impacts as activities occurring within 20 feet and 100 feet, respectively, of the dripline of elderberry shrubs meeting the definition of VELB habitat (i.e., elderberry shrubs measuring at least one inch in diameter at ground level). The majority of the elderberry shrubs are located in the alkali scrub, grassland, and ruderal plant communities in the wildlife and former peach pit disposal area in the western portion of the Project area (Figure 3-3). One elderberry shrub is located along an access road north of the firing range in the eucalyptus grove. As currently planned, construction of the proposed Project would require the removal of the one shrub located in the eucalyptus grove. This shrub contains five stems greater than 1 inch (but less than 3 inches) in diameter, does not have beetle exit holes, and is within historically riparian habitat. Without mitigation, this is considered to be a significant impact.

Mitigation Measures

> **Measure 4.13.1a:** The one elderberry shrub that cannot be avoided by the project shall be transplanted following USFWS (1999) guidelines. Transplanting this shrub meets the definition of "take" of a federally-listed species and will require coordination with and approval from the USFWS. Transplanting shall only occur when the shrub is dormant (approximately November through the first two weeks in February) and shall follow the procedures described in USFWS (1999) as updated. The area that the shrub is transplanted to shall also be planted with at least 10 additional elderberry cutting or seedlings, and at least five associated native species (Gooding's willow and black walnut), and shall be

protected in perpetuity by the City per USFWS (1999). Obtaining USFWS approval to "take" this shrub could take up to one year to complete the necessary consultation and review process.

Impact Significance After Mitigation: Less than significant.

Impact 4.13.1b: Blunt-Nosed Leopard Lizard. Habitat for the blunt-nosed leopard lizard (alkali scrub and non-native annual grasslands) occurs in the former peach pit disposal area in the western portion of the Project study area. Blunt-nosed leopard lizards use open, sparsely vegetated habitats and are threatened by disturbance, destruction, and fragmentation of their habitat. When displaced, they may not be able to survive in adjacent habitat if it is unsuitable for colonization. Due to the heavy use of this area prior to its revegetation with alkali scrub plants, its isolation from other suitable habitat (e.g., the Sandy Mush Road Essential Habitat Area, over five miles south west of the Project), and the dense vegetation cover present in the area, the habitat is unlikely to be occupied by this species. Additionally, no Project construction would occur in the alkali or grassland habitat of this area. Therefore, for this species, the Project would result in a less-than-significant impact.

Mitigation: None required.

Impact.4.13.1c: Giant Garter Snake. Construction activities would occur within potential giant garter snake aquatic and upland habitat and would result in 1.96 acres of temporary and 1.23 acres of permanent habitat loss (refer to Table 4-9). (Potentially Significant)

The Project study area was assessed for giant garter snake habitat during the field surveys. Suitable habitat exists in Hartley Slough, Miles Creek, the agricultural ditches (Ditches 1, 2, 3, and a portion of 4), and their respective adjacent uplands, up to 200 feet from the bank (Figure 3-3). Approximately 9.0 acres of aquatic and 34.5 acres of upland habitat exist in the Project area for giant garter snake. Construction of the new roadway over Hartley Slough at the WWTP entrance and the new effluent outfall, the filling of the southern portion of the effluent channel, the rerouting of Hartley Lateral and Paden Drain, and subsequent dewatering of a portion of Hartley Lateral would involve work within potential giant garter snake aquatic and upland habitat and would result in 2.03 acres of temporary and 1.24 acres of permanent habitat loss (Table 4-9).

In addition, inadvertent construction of the Project would result in temporary habitat degradation and, potentially, direct take. Permanent loss includes temporary impacts that span more than two seasons (one season is May 1 to October 1). Without mitigation, this is considered to be a potentially significant impact.

TABLE 4-9
IMPACT AND MITIGATION FOR LOSS OF GIANT GARTER SNAKE HABITAT

Habitat Type	Duration of Loss	Acres Affected	Mitigation Ratio	Mitigated Acres Replaced
Aquatic	Permanent	0.54	3:1	1.62
Upland	Permanent	0.70	3:1	2.10
Aquatic	Temporary	0.21	n/a	Restore
Upland	Temporary	1.82	n/a	Restore

Source: ESA, 2006

Mitigation Measure

Measure 4.13.1c: The following mitigation measure shall be implemented to reduce Project impacts on giant garter snake:

A. All construction activity within giant garter snake habitat shall be conducted between May 1 and October 1. This is the active period for giant garter snakes and the potential for direct impacts are reduced because snakes are actively moving and avoiding danger. More danger is posed to snakes during their inactive period, because they are occupying underground burrows or crevices and are more susceptible to direct effects, especially during excavation. Between October 2 and April 30, the City or its biological consultant will contact the USFWS's Sacramento Office to determine if additional measures are necessary to minimize and avoid take.

B. Any dewatered habitat must remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.

C. Construction personnel shall participate in a worker environmental awareness program. Under this program, workers shall be informed about the presence of giant garter snakes and habitat associated with the species and that unlawful take of the animal or destruction of its habitat is a violation of the Federal Endangered Species Act (FESA). This instruction shall be conducted by a qualified biologist[6] prior to construction activities. Proof of this instruction shall be submitted to the City.

D. Within 24 hours before construction activities begin in areas of giant garter snake habitat, a qualified biologist shall inspect the site. The biologist will provide the City with a field report form documenting the monitoring efforts within 24 hours of commencement of construction activities. The monitoring biologist shall be available thereafter; if a snake is encountered during construction activities, the monitoring biologist shall have the authority to stop construction activities until appropriate corrective measures have been completed or it is determined that the snake will not be harmed. Giant garter snakes encountered during construction activities will be allowed to move away from construction activities on their own. Capture and

6 A qualified biologist is one who has previously received authorization by USFWS to conduct the activities described in this section.

relocation of trapped or injured individuals shall only be attempted by personnel or individuals with current Service recovery permits pursuant to section 10(a)(1)(A) of FESA. The biologist shall be required to report any incidental take to the City immediately by telephone and by written letter within one working day. The project area shall be reinspected whenever a lapse in construction activity of two weeks or more has occurred.

E. Clearing of wetland vegetation will be confined to the minimal area necessary to excavate toe of bank for riprap or fill placement. Channel excavation for removal of accumulated sediments will be accomplished by using equipment located on and operated from top of bank, with minimal disturbance of vegetation.

F. Movement of heavy equipment to and from the project site shall be restricted to established roadways to minimize habitat disturbance. Preserved giant garter snake habitat shall be designated as Environmentally Sensitive Areas and shall be flagged by a qualified biologist and avoided by all construction personnel.

G. After completion of construction activities, any temporary fill and construction debris shall be removed and, wherever feasible, disturbed areas shall be restored to pre-Project conditions.

H. Affected giant garter snake habitat shall be replaced or restored in kind at a 3:1 ratio (see Table 4-9). This table assumes that temporary impacts will only last one season.

I. All replacement habitat must include both upland and aquatic habitat components. Upland and aquatic habitat components must be included in the replacement habitat at a ratio of 2:1 upland acres to aquatic acres (see Table 4-9).

J. Restored habitat shall receive one year of monitoring with a photo documentation report due to the City one year from implementation of the restoration with pre- and post-Project area photos.

K. Monitoring of replacement habitat with a photo-documentation report shall be conducted for five years and submitted to the City annually.

The calculations of acres lost assumes no impacts to land north of the access road paralleling the north bank of the southern reach of the effluent channel; disturbance during only one season; and the revegetation of all temporarily disturbed areas.

Impact Significance After Mitigation: Less than significant.

Impact 4.13.1d: <u>Swainson's Hawk</u>. A relatively small amount of potential foraging habitat would be lost to Project construction; however, nesting pairs of Swainson's hawks in the Project study area could be adversely affected by construction activities. (Potentially significant)

The Project study area provides potential nesting and foraging habitat for Swainson's hawk. Given the abundance of available foraging habitat in the Project vicinity, the approximately 26 acres of potential foraging habitat lost to Project construction is unlikely to affect the success

of Swainson's hawk that may nest in the area (the nearest documented historic nest site is located about three miles from the WWTP site). However, based on CDFG Guidelines, the loss of foraging habitat resulting from WWTP expansion is considered a potentially significant impact.

According to the CNDDB, the nearest reported active nesting sites have been found within 4.5 miles of the WWTP study area, however, nesting habitat is present in and near the WWTP site. Nesting pairs of Swainson's hawks in the Project study area may be adversely affected by construction activities. Failure of a Swainson's hawk nest due to Project construction would be considered a potentially significant impact.

Mitigation Measure

Measure 4.13.1d: In order to avoid impacts to nesting Swainson's hawk, pre-construction surveys shall be conducted by a qualified biologist[7] during the bird and raptor breeding season (March 1 to August 15), before the start of any construction activities. Similar to Mitigation Measure 4.13.2d the City shall have a qualified biologist to conduct surveys in habitat suitable for nesting raptors. For Swainson's hawk, however, the survey area includes one-half-mile from any construction activity, in accordance with CDFG guidance. Surveys may be combined with general raptor surveys as detailed in Measure 4.13.2d and shall follow the same survey schedule.

If nesting Swainson's hawk is detected within the survey area, the City shall maintain a one-half-mile buffer around the nests of Swainson's hawk. No construction activities shall be allowed within this buffer during active nesting. Buffers shall be marked in the field with stakes and flagging at all potential access points to the buffer. Buffers shall remain in place until the nest is no longer active, as determined by a qualified biologist. If a buffer distance needs to be reduced, a qualified biologist will determine if the reduction is appropriate, and what the reduced buffer distance will be. A reduction in buffer distance must be approved by the City, who may consult with CDFG. If the buffer is reduced, a qualified biologist shall be retained to monitor the nest during construction activity occurring within one-half-mile of the nest. The biologist shall inform the City's construction manager immediately if construction activities within the half mile buffer threaten to cause the adults to abandon the nest. The biologist shall submit the locations of nests detected during the surveys to the CNDDB.

The City will mitigate for the loss of Swainson's hawk foraging habitat consistent with CDFG requirements for lands within 5 miles of an active nest.

Impact Significance After Mitigation: Less than significant.

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7 A qualified biologist must be skilled in identifying Swainson's hawk in the field and have at least three years of experience conducting raptor surveys.

Impact 4.13.1e: Greater Sandhill Crane. Construction activities could cause the loss of foraging habitat for wintering greater sandhill crane within the Project study area. (Less than Significant)

The Project study area and agricultural fields located in surrounding vicinity may provide foraging habitat for wintering greater sandhill crane. Given the abundance of available open habitat surrounding the Project study area, the loss of about 26 acres foraging habitat to construction within the Project study area is relatively small and unlikely to affect these wintering species. Therefore, this loss of foraging habitat is considered less than significant.

Mitigation: None required.

Impact 4.13.1.f: San Joaquin Kit Fox. The Project would impact potential San Joaquin kit fox denning habitat in the grasslands and alkali scrub in the western portion of the Project study area or to the open areas within and surrounding the Project study area that may serve as movement or linkage habitat for San Joaquin kit fox. (No Impact)

The Project study area may provide denning habitat for San Joaquin kit fox in the grasslands and alkali scrub in the western portion of the Project study area. However, the immediate WWTP facility area is fenced, thereby precluding the use of this area as denning habitat for this species. With the exception of the proposed outfall, no construction would occur the western portion of the Project study area ,and therefore, the Project would not have a significant impact on San Joaquin kit fox denning habitat.

The open areas within and surrounding the Project study area, including the sludge lagoons and adjacent spreading fields and agricultural fields, may serve as movement corridors or linkage habitat for San Joaquin kit fox as well. However, since the operations at the WWTP would not significantly change the use of the landscape, movement of San Joaquin kit fox would not be impeded and the Project would have no impact on linkage habitat for San Joaquin kit fox.

Mitigation: None required.

Impact 4.13.2: The Project study area provides habitat for several species of concern. The species with potential to occur are western pond turtle, tricolored blackbird, burrowing owl, ferruginous hawk, mountain plover, white-tailed kite, loggerhead shrike, Merced kangaroo rat, San Joaquin pocket mouse, and American badger. Construction and/or operation of the proposed Project may temporarily or permanently impact fish and wildlife species or substantially reduce their habitats. (Potentially Significant)

Impact 4.13.2a: Tricolored Blackbird. The tricolored blackbird is reported by the CNDDB within less than five miles from the Project site and a breeding colony has been documented about 2.5 miles from the WWTP (Leeman, 2004). This species typically nests in freshwater emergent vegetation but may also nest in upland ruderal areas and certain agricultural crops.

Construction activities may affect nesting tricolored blackbird, potentially reducing reproductive success. Without mitigation, this is considered a significant impact.

> **Measure 4.13.2a:** In order to avoid impacts to nesting tricolored blackbirds, pre-construction surveys shall be conducted in potential breeding habitat within 500 feet of construction by a qualified biologist[8] during the breeding season (March 1 to July 15), before the start of any construction activities. The City shall have a qualified biologist to conduct surveys in habitat suitable for tricolored colonies. Any construction within the Project study area shall avoid active tricolored blackbird colonies by a 500-foot buffer. If warranted by site conditions (as evaluated and documented by a qualified biologist), this buffer may be reduced with the approval of the City, which may consult with CDFG.
>
> **Impact Significance After Mitigation:** Less than significant.

Impact 4.13.2b: Western Pond Turtle. The western pond turtle is reported by the CNDDB within five miles of the Project site. Construction within aquatic habitats in the Project study area may result in direct mortality of western pond turtle, as well as basking habitat for western pond turtle. Emergent vegetation in the Project study area is mostly tule and cattail, which, due to the fast-growing nature of this vegetation, its abundance in the Project study area, and the relatively small areas disturbed, would likely recolonize disturbed areas very quickly. Therefore, Project construction may result in temporary loss of emergent vegetation within aquatic habitat. This impact is considered less than significant. Unnecessary loss of western pond turtle individuals would be considered a significant impact.

Construction of the outfall in Hartley Slough would permanently remove about 0.1 acre of aquatic habitat. Relative to the availability of aquatic habitat, the loss of this habitat would be considered less than significant for this species.

Mitigation Measure

> **Measure 4.13.2b:** To avoid mortality of or western pond turtle during construction, a qualified biologist[9] shall be onsite during any canal or surface water dewatering activities. This biologist shall remove any stranded western pond turtles and shall release them to Hartley Slough.
>
> **Impact Significance After Mitigation:** Less than significant.

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8 A qualified biologist must be skilled in identifying tricolored blackbirds in the field and have at least three years of experience conducting avian surveys.

9 A qualified biologist must be skilled in identifying western pond turtles and hold appropriate authority from CDFG to relocate turtles.

Impact 4.13.2c: Burrowing Owl**.** A habitat assessment and a focused non-breeding season field survey were conducted for burrowing owl within the Project study area. Several areas within the Project study area have potential to support burrowing owls. These areas are along the banks of Ditch 3, in the earthen slope along the eastern edge of the WWTP, along the banks of the sludge lagoons and the first east-west access road south of the WWTP, and along the banks of the effluent channel flowing west toward the confluence with Hartley Slough. Although the presence of burrowing owls was not documented during the habitat assessment and non-breeding season survey, there is potential for nesting pairs to occupy the available habitat during the breeding season. If burrowing owl is found to occupy the Project study area, then construction activities may result in direct habitat loss, take, or cause abandonment of the nest. Without mitigation, this is considered a significant impact.

Mitigation Measure

Measure 4.13.2c: The following mitigation will be implemented to avoid potential impacts from Project construction activities:

A. A pre-construction survey of suitable habitat and buffers will be conducted within 30 days prior to construction to ensure no additional burrowing owls have established territories since the initial surveys. If ground-disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site shall be resurveyed.

B. No disturbance shall occur within 75 meters (about 250 feet) of an occupied burrow during the breeding season (February 1 to August 31) or within 50 meters (about 160 feet) during the non-breeding season.

C. Foraging habitat contiguous with occupied burrow sites shall be permanently preserved, where feasible, at a ratio of 6.5 acres per pair of breeding or single unpaired resident burrowing owl; this is equivalent to a 100-meter (about 300-foot) foraging radius around the burrow. The protected habitat shall be adjacent to occupied burrowing owl habitat and its configuration shall be approved by a qualified biologist.[10]

D. When destruction of occupied burrows is unavoidable, existing unsuitable burrows shall be enhanced (enlarged or cleared of debris) or new burrows shall be created by installing artificial burrows at a ratio of 2:1 on the protected site, in consultation with CDFG.

E. If owls must be moved away from the disturbance area, passive relocation during the non-breeding season with one-way doors shall be used. Owls shall be excluded from burrows in the immediate impact zone and within a 50-meter (about 160-foot) buffer zone by installing one-way doors in burrow entrances. One-way doors shall be left in place 48 hours to insure owls have left the burrow before excavation. Two natural or artificial burrows shall be provided for each burrow in the Project study area that will

[10] A qualified biologist must be skilled in identifying burrowing owl and their habitat in the field, be familiar with their breeding and non-breeding behavior and general life history, and have at least three years of experience conducting burrowing owl surveys.

be rendered biologically unsuitable. The Project study area shall be monitored daily for one week to confirm owl use of the new burrows before excavating burrows in the immediate impact zone. Burrows shall be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe shall be inserted into the tunnels that become established prior to excavation to maintain an escape route for any animals within the burrow. Relocation shall be performed in consultation with CDFG and conducted by a biologist with appropriate authority to implement this measure.

Impact Significance After Mitigation: Less than significant.

Impact 4.13.2d: White-Tailed Kite, Loggerhead Shrike, and Other Non-Listed Birds**.** The Project area provides suitable nesting and foraging habitat for white-tailed kite, loggerhead shrike, and other birds. Given the abundance of available foraging habitat in the Project vicinity, the approximately 26 acres of potential foraging habitat lost to Project construction is unlikely to affect the success of these birds. Therefore, the loss of foraging habitat is considered less than significant. However, nesting pairs of white-tailed kite, loggerhead shrike, and other birds in the Project study area may be adversely affected by construction activities. Failure of a raptor nest (protected under Fish and Game Code Section 3503) due to Project construction would be a significant impact.

Mitigation Measure

- **Measure 4.13.2d:** In order to avoid impacts to nesting raptors, pre-construction surveys shall be conducted 30-days prior to the start of construction by a qualified biologist[11] during the raptor breeding season (March 1 to August 15),. The City shall have a qualified biologist conduct three surveys in habitat suitable for nesting raptors and other birds within 500 feet of any construction activities. These surveys shall be conducted by a qualified biologist with demonstrated bird and raptor nest-searching experience.

If nesting raptors are detected within the survey area, the City shall maintain a 500-foot buffer around the nest. No construction activities shall be allowed in these buffers. Buffers shall be marked in the field with stakes and flagging at all potential access points to the buffer. Buffers shall remain in place until the nest is no longer active, as determined by a qualified biologist. If warranted by site conditions (as evaluated and documented by a qualified biologist), this buffer may be reduced with the approval of the City, which may consult with CDFG. The biologist shall submit the locations of nests detected during the surveys to the CNDDB.

Impact Significance After Mitigation: Less than significant.

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[11] A qualified biologist must be skilled in identifying avian species, including raptors, in the field and have at least three years of experience conducting such surveys.

Impact 4.13.2e: Ferruginous Hawk, Mountain Plover, Merced Kangaroo Rat, San Joaquin Pocket Mouse, and American Badger**.** The Project area and surrounding Project vicinity may provide foraging habitat for wintering ferruginous hawk and mountain plover. Given the abundance of available open habitat surrounding the Project study area, the loss of foraging habitat to construction within the Project study area is relatively small and unlikely to affect these wintering species. Therefore, the loss of this foraging habitat is considered less than significant.

Potential year-round habitat exists in the Project area for Merced kangaroo rat, San Joaquin pocket mouse, and American badger. These species have potential to occur in the grassland and scrub habitat within the peach-pit disposal and wildlife area in the western portion of the Project study area, adjacent to Hartley Slough. No construction activities would occur in this area. Therefore, with respect to these species, the Project would have no impact.

Mitigation: None required.

Table 4-10 portrays the sensitive periods when construction would potentially pose an impact to the species identified in Section 4.13 of this document. It should be noted that this portrayal is considered to be a worst case scenario and several of these periods could be eliminated with appropriate field investigations.

4.14 Environmentally Sensitive Areas

4.14.1 Significance Criteria

The Project would result in a significant impact on environmentally sensitive areas if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to non-agricultural use;
- 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;
- Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFG or USFWS;
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan;
- Place structures within a 100-year flood hazard area that would impede or redirect flood flows; or
- Cause the loss of a critical habitat.

TABLE 4-10
ENVIRONMENTAL MITIGATION RESTRICTIONS ON WWTP EXPANSION

Mitigation	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	COMMENTS
Giant Garter snake	Limited to waterways and adjacent uplands, except effluent channel.									Limited to waterways and adjacent uplands, except effluent channel.			USFWS may permit construction in Oct-Apr with monitoring
Swainson's Hawk			Restricts disturbing activities within ½ mile of active nest										Presence of active nests not likely; Can be eliminated with survey demonstrating no effect
Raptors and Other Birds			Restricts disturbing activities within 500-feet of active nest										Presence of active nests not likely; Can be eliminated with survey demonstrating no effect
Tri Colored Blackbird			Restricts disturbing activities within 500-feet of active nest										Presence of active nests not likely; Can be eliminated with survey demonstrating no effect
Burrowing Owl Non-Breeding	.							Burrows limited to roadway and levee embankments. Restricts construction within 160-feet of active burrow.					Winter 2005 survey showed no burrowing owls present; Spring 2006 could eliminate concern.
Burrowing Owl Breeding			Restricts construction within 500-feet of active burrow.										Winter 2005 survey showed no burrowing owls present; Spring 2006 could eliminate concern.
Valley Elderberry Long-horn Beetle											One elderberry plant affected by outfall relocation		Period for transplanting elderberry shrub in green.

The Project is not located in a coastal zone and, therefore, would not conflict with coastal zone management activities. No designated wild and scenic rivers occur in the Project area or would be affected by expansion of the WWTP.

4.14.2 Methodology

This analysis included a review of sensitive habitats and jurisdictional waters of the United States that occur at the WWTP site and vicinity. Resources were identified using pertinent literature, database queries, and reconnaissance field surveys of the Project site on August 3, November 15–17, and December 6, 2005. The U.S. Geological Survey (USGS) 7.5-minute quadrangles for Sandy Mush and Atwater were reviewed to determine critical habitat in the project area (USFWS, 2005a).

4.14.3 Impacts and Mitigation Measures

Impact 4.14.1: Project implementation would result in the conversion of economically viable prime farmland and farmland of statewide importance to non-agricultural uses. (Potentially Significant)

As described in Chapter 3, Environmental Setting, agricultural lands within the proposed WWTP expansion area meet the qualifications for Prime Farmland and Farmland of Statewide Importance (DOC, 2002). The Project would involve the placement of a new levee, administrative building and laboratory, and new head works within the proposed expansion area with the remaining area serving a buffer lands and available for agricultural use following construction. Given that roughly half of the expansion area is classified as prime farmland or farmland of statewide importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, the permanent conversion of these lands to non-agricultural use is considered significant.

In 2002, there were approximately 286,054 acres of Prime Farmland and 158,405 acres of Farmland of Statewide Importance within the total of 1,165,872 acres of agricultural land in Merced County. Therefore, the conversion of roughly 10 acres of each farmland class (20 acres total) would be minimal in the context of the entire County's agricultural land base, but substantial enough to warrant a significant-impact determination.

Minimizing the impact would require reducing the footprint of the WWTP facilities with a corresponding reduction in important farmland converted. The WWTP expansion area has been designed to minimize or avoid conversion of both farmland and sensitive habitat. The permanent addition of up to 46 acres to the WWTP facility would occupy up to 20 acres of the 42-acre parcel. While this preserves 22 acres of important farmland, the conversion of 20 acres remains a significant impact. The other 4 acres being added to the WWTP are not in an existing agricultural use.

Mitigation Measure

Measure 4.14.1: The 22 acres of farmland within the WWTP expansion area, not required for the WWTP facility, shall remain in an agricultural land use. The City shall pay into a recognized trust fund that will acquire agricultural conservation easements to compensate for the conversion of 20 acres of farmland within the WWTP expansion area. The farmland subject to the easements shall be of the same acreage, and at least the same category of farmland, as identified by the latest FMMP report, as that farmland affected at the WWTP.

With the implementation of Mitigation Measure 4.14.1, the impact to the remaining 22 acres would be reduced to a less-than-significant level. However, offsite conservation easements over existing farmland would not provide full Project-level mitigation, because they would not compensate for the loss or farmland due to the Project or replace the resources lost because they would not reduce the overall net loss of farmland by the WWTP. Therefore, the direct impact and permanent conversion of important farmlands as a result of the expanded WWTP would be significant unavoidable.

Impact Significance After Mitigation: Significant and unavoidable.

Impact 4.14.2: Project construction and/or operation would affect federally protected wetlands, as defined by Section 404 of the Clean Water Act, by removal, filling, hydraulic interruption, or other disturbance. (Potentially Significant)

"Waters of the United States," including wetlands and "other waters" (e.g., streams), are regulated under Section 404 of the Clean Water Act. A Department of Army permit from the Corps is required for impacts to jurisdictional waters of the U.S. For purposes of this analysis, maximum conservative impact estimates were made for permanent impacts, following the criteria and assumptions provided below. As Project design is finalized and specifically required construction easements identified, the conservative impact estimates would likely decrease from those described herein. Impacts to waters of the U.S. were found to occur to occur in areas within the Project development footprint shown on Figure 2-3 and the southern segment of the effluent channel.

Hartley Slough

Hartley Slough waters and a very limited amount of fringing wetland (0.05 acre) would be affected by Project implementation including construction of a new bridge at the WWTP entrance, removal of the existing bridge, the intertie of rerouted Paden Drain and Hartley Lateral into the slough, and a new effluent outfall (Figure 2-3). In association with these activities, minimal temporary and permanent impacts would occur to wetlands, which narrowly fringe the banks (within the ordinary high water) of the slough in the affected areas. Construction of the project elements listed above would affect approximately 84 linear feet of Hartley Slough.

Most of the work associated with Hartley Slough would occur along the streambanks (e.g., bridge abutments, outfall installation). It is assumed that impacts within the channel would occur no more than 10 feet away from the channel bank, and would be associated solely with the new bridge and outfall, which would comprise the 84 linear feet of bank. The new bridge (44 linear

feet) would affect both banks of Hartley Sough while the outfall structure (40 feet) would only affect only one bank. Based on the assumption of a 10-foot width of maximum impacts to open water/channel bed, this would amount to about 0.03 acre.

Effluent Channel

The southern length (5,000 feet; 2.57 acres) of the effluent channel would be filled, since the effluent would no longer be routed to Hartley Slough via this channel. Due to the water needs of the wildlife management area south of the WWTP, the eastern portion of the effluent channel would not be filled. Pending verification of the completed wetland delineation by the Corps, the effluent channel is not expected to be considered jurisdictional under the Clean Water Act, because the channel is an operational facility of the WWTP and flows only from the channel into the slough and not from the slough into the channel. Therefore, the effluent channel is considered non-jurisdictional, and its filling would not likely be subject to regulation under Section 404 of the Clean Water Act.

Ditches

Ditches within the Project study area are considered non-wetland "other waters."

The ditches that underlie the Project development footprint, including those that would have portions rerouted (Paden Drain and Hartley Lateral), and the northernmost approximately 600 feet of the effluent channel would be affected by the Project. As Project design elements are further clarified, there may be less impacts to ditches than that described herein.

Table 4-11 lists permanent impacts to waters of the U.S. that would result from the Project. Without mitigation, these would be significant impacts. This impact analysis assumed that the effluent channel is a non-jurisdictional feature. The analysis also assumed a worst-case disturbance area.

TABLE 4-11
IMPACTS TO WETLANDS AND OTHER WATERS IN THE PROJECT STUDY AREA

Type of Impact	Affected Area Acres (Linear Feet))
Wetland (Permanent)	0.05 (n/a)
Other Waters (Permanent)	0.55 (2,818)
Total	0.60 (2,818)

SOURCE: ESA, 2006

Mitigation Measures

Measure 4.14.2a: Permanent impacts to jurisdictional waters of the U.S. would be mitigated at a minimum 1 for 1 ratio consistent with the regulatory guidance of the Corps and/or other regulatory agencies.

Compensatory mitigation may include the purchase of mitigation credits at a Corps-approved wetland mitigation bank, or through other options consistent with the Section 404 regulatory program including "in-lieu-fee" mitigation in which the applicant provides funds to an in-lieu-fee sponsor such as the National Fish and Wildlife Foundation, or onsite mitigation, which would consist of creating wetland habitat and providing assurances and monitoring to ensure success in perpetuity.

Measure 4.14.2b: Construction activities shall avoid and minimize adverse impacts to jurisdictional waters of the U.S. to the maximum practicable extent.

Areas used for staging and temporary stockpiling during Project construction shall be prohibited from being within such waters including wetlands and shall be clearly defined on final construction plans. Storage of equipment and/or debris shall not occur within 25 feet of jurisdictional waters. Work within jurisdictional waters including trenching and bridge construction shall occur during low-flow or dry periods. Standard and appropriate BMPs including use of silt fences and/or straw bales shall be utilized to prevent incidental discharge of material into jurisdictional waters.

Impact Significance After Mitigation: Less than significant.

Impact 4.14.3: Project construction and/or operation could impact sensitive natural communities identified by CDFG or USFWS. (No Impact)

No CDFG or USFWS sensitive natural communities exist within the Project study area; however, the CNDDB identifies Northern Claypan Vernal Pool, a sensitive community, within the vicinity of the Project area. The nearest Northern Claypan Vernal Pool is located approximately one-half mile south of the Project study area. Construction of the Project would not affect any Northern Claypan Vernal Pool. Therefore, the Project would have no impact on CDFG or USFWS sensitive natural communities.

Mitigation: None required**.**

Impact 4.14.4: The Project would conflict with an adopted HCP, NCCP, or other approved local, regional, or state plan for conservation of habitat. (No Impact).

No Habitat Conservation Plan (HCP) or Natural Communities Conservation Plan (NCCP) has been adopted for the Project site or surrounding lands. Therefore, the Project would not directly conflict with any adopted HCP or NCCP. As a result, no impact would occur.

Mitigation: None required.

Impact 4.14.5: Project construction on floodplains could impede floodwaters or expose structures to significant losses. (Less than Significant)

The proposed WWTP facilities would be located within a FEMA-designated 100-year floodplain. New levees similar to the levees found at the WWTP would be constructed and would range from 5 to 7 feet high with a crest width of about 15 feet to allow vehicle access. This construction could raise flood water elevation by displacing floodwaters. The project would result in intruding onto 25 acres of floodplain. This intrusion equals about 0.01 percent of the 290,000-acre floodplain in this portion of Merced County. As a result, this minor intrusion would have a minimal effect on floodwater elevation or the areal extent of flooding.

Currently, the administrative and treatment facilities, including the biosolids drying beds are protected from the 100-year flood. As part of the Project, the City would continue to provide adequate flood protection features to avoid flooding roadways and the treatment facilities. The levees would be designed with flood diversion features capable of directing 100-year flood waters into Hartley Slough. The City would be required to submit a Letter of Map Revision to FEMA to update the 100-year floodplain base flood elevation in the affected areas. With the implementation of measures, the project would have a less-than-significant impact on the environment.

Mitigation: None required.

Impact 4.14.6: Project construction could cause the loss of critical habitats. (No Impact)

No critical habitat is designated for those species with potential to occur in or in the vicinity of the Project study area. Therefore, the Project would have no impact on critical habitats.

Mitigation: None required.

4.15 Solid Waste and Energy

4.15.1 Significance Criteria

The Project would result in a significant environmental impact if it would:

- Be served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs
- Fail to comply with federal, state, and local statutes and regulations related to solid waste
- Use substantial amounts of fuel or energy
- Create a substantial increase in demand upon existing sources of energy, require the development of new energy sources, or require construction of additional facilities for energy generation or distribution to meet the increased demand, the development and construction of which could cause significant environmental impacts

4.15.2 Impacts and Mitigation Measures

Impact 4.15.1: Project construction and operation wastes would be disposed of in a landfill without sufficient permitted capacity to accommodate the Project's solid waste disposal needs. (Less than Significant)

Construction-related waste would be disposed of at one of the County's licensed landfills that has adequate capacity to accommodate the growth of the County and possesses sufficient capacity to accommodate the Project's construction solid waste. Either the Highway 59 Landfill or the Billy Wright Landfill would be used and have a remaining useful life, with expansion, of 25 years and 14 years, respectively.

Solid waste generation, during operation of the Project would increase corresponding to the number of on-site personnel and associated activities. It is estimated that solid waste generation may double existing production levels. Solid waste would continue to be disposed of off-site and managed by the City. Biosolids handling and treatment is discussed in Chapter 2, Project Description, and after being treated and dried, the biosolids would be land-applied as agricultural fertilizer. This impact is considered to be less than significant.

Mitigation: None required.

Impact 4.15.2: Project construction would conflict with federal, state, and local solid waste management statutes and regulations. (Less than Significant)

Construction of the expanded WWTP would generate substantial amounts of construction debris, especially during the construction of the structural foundations, and to a lesser extent, during the relocation of existing facilities. Some materials excavated during Project grading would be used as fill materials for the new levees and the effluent channel. Once collected, non-reusable solid wastes generated during construction (including recyclable materials) would be taken to the nearest Materials Recovery Facility/transfer station with non-recyclables being transferred to Merced County (Highway 59) Landfill. The Highway 59 Landfill site currently operates as a Class III landfill with Class II surface impoundments.

This management of solid wastes generated during WWTP expansion would be consistent with applicable statutes and regulations. The potential impact is considered less than significant.

Mitigation: None required.

Impact 4.15.3: Project operation would use substantial amounts of energy, which in turn could create a substantial increase in demand upon existing sources of energy or require construction of additional facilities for energy generation or distribution to meet the increased demand. (Potentially Significant)

The WWTP's electrical system supplies 1,563 kilovolt-amperes (KVA) (75 A at 12.47 kV) at peak running loads. With the plant's expansion, peak running loads would include an additional 3,812 KVA (183 A at 12.47 kV), for a total expansion utility service peak loading of 5,375 KVA (258 A at 12.47 kV). The main switchgear has adequate capacity for the proposed additional loads, but the MID service transformer incoming electric transmission line would need to be

upgraded to serve the WWTP. MID would need to confirm if the electric transmission line would have to be upgraded. The need to upgrade or construct new energy distribution facilities is considered a potentially significant impact.

The expanded WWTP would not create an energy demand that cannot be served by MID. The Project would not create conditions that require construction of additional facilities for energy generation.

Mitigation Measure

> **Measure 4.15.3:** The City will consult with MID to determine the appropriate energy facility upgrades needed to supply the expanded WWTP and in turn will obtain a would-serve letter from MID for energy supplies.
>
> **Impact Significance After Mitigation:** Less than significant.

4.16 Transportation and Circulation

4.16.1 Significance Criteria

The Project would result in a significant transportation/circulation impact if it would:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)
- Construction activity significantly impedes access to adjacent uses, including emergency vehicle access.
- Construction activity poses a traffic safety hazard to motor vehicles, bicyclists, or pedestrians.
- The movement of heavy vehicles causes substantial damage or wear of public roadways.
- Construction activities substantially affect local transit service.
- Construction substantially affects parking supplies.

4.16.2 Methodology

This impact analysis provides an assessment of the Project's construction and operational effect to the current traffic volumes and capacity of the local roadway system, which traverse both City and County jurisdiction.

The impacts associated with project-induced traffic were calculated from estimated construction equipment and materials deliveries, crew sizes, and the intensity and duration of construction activities.

A construction scenario involving simultaneous construction activities was assumed and includes pipeline trenching (one crew), cut and fill operations (one crew), and foundation and building construction (two crews) using the same access roadways. As described in Chapter 2, these crews could generate up to 88 daily vehicle trips. In addition, up to 50 average daily trucks trips are anticipated during construction, with the exception of mid-2007, where the average number of daily truck trips could be as high as 100. The anticipated truck haul route is illustrated on Figure 2-9.

4.16.3 Impacts and Mitigation Measures

Impact 4.16.1: Project construction would substantially increase the number of daily vehicle trips on local roadways that provide access to the WWTP, in relation to existing traffic and roadway capacity. (Potentially Significant)

Vehicle trip generation associated with Project construction would consist of two components:

- Vehicle trips by construction crews
- Truck trips associated with hauling construction equipment, materials, and waste

During a maximum construction day, up to 100 daily truck trips would occur along with ingress and egress of the 44 construction employees. During the most active part of the construction period, WWTP employees and biosolids hauling trips would be comparable to existing conditions. Truck haul-related construction trips would be dispersed throughout the day and, to the extent feasible, would be planned to avoid peak traffic hours.

It is estimated that up to 44 new peak-hour construction employee trips could occur, along with up to 10 construction haul truck trips and existing biosolids haul trips and WWTP employees. This would equate to a maximum increase during a peak hour of 55 trips associated with construction of the Project. This volume of traffic equals about 3 percent of the estimated roadway capacity for two-lane arterials.

Because the affected roadways currently operate at an acceptable LOS, the temporary increase of traffic on local roadways equaling a 3 percent increase during peak-hour conditions is not considered substantial and not expected to result in increased traffic congestion, impede vehicle movement, pose a hazard to roadway use, or interfere with emergency vehicle access. However, because project construction would last for several years and would occur on roadways planned for extensive realignment (SR 140), the combination of construction activities and new vehicle trips associated with continued build-out within the SUDP area, could result in future traffic impacts that could be potentially significant. With the implementation of the prescribed mitigation, these impacts would be considered less than significant.

Mitigation Measures

Measure 4.16.1a: Prior to the start of Project construction, a Traffic Control Plan that addresses vehicle movement along Project-affected roadways and intersections shall be prepared. This plan shall designate haul routes for the Project in consultation with Caltrans and Merced County Department of Transportation. The plan should include the following measures:

- Maintaining the maximum amount of travel lane capacity during non-construction periods.
- If larger construction equipment or articulated trucks will have difficulty maneuvering at haul route-affected intersections, provide a flagman for traffic control at the access road on an as-needed basis.
- Truck routes shall avoid known congested intersections and roadways during peak traffic periods. Alternative truck routing and/or rescheduling truck trips to off-peak periods shall be included.

Measure 4.16.1b: The City shall arrange for a 24-hour telephone hotline to address public questions and complaints during Project construction.

Measure 4.16.1c: Heavy trucks and other construction transport vehicles shall avoid the busiest commute hours (7 to 8 a.m. and 5 to 6 p.m. on weekdays) on highly congested roadways in the Merced community.

Impact Significance After Mitigation: Less than significant

Impact 4.16.2: Project operation would substantially increase the number of daily vehicle trips on local roadways that provide access to the WWTP, in relation to existing traffic and roadway capacity. (Potentially Significant)

The additional quantities of biosolids generated as a result of the WWTP's increased operational capacity would generate a total need for 355 trucks trips year at 20 mgd; an increase from the current 150 trucks trips year. On average, these trips would equate about three new daily truck trips above existing conditions.

In addition, 6 new employee trips are expected as the WWTP reaches the 20 mgd level of operations. These new truck and employee vehicle trips would add to the traffic volumes on nearby roadways after 2008.

The total number of new trips associated with Project operations would be 34 trips in the peak hour in 2012 (assuming 25 peak hour construction employee trips, six new permanent employee trips, and three biosolid hauling trips). This volume of traffic equals about 2 percent of the capacity of local two-lane roadways. This increase is not considered substantial, but in combination with other planned road improvement projects and new vehicle trips generated by local development, project-generated traffic could contribute to increased traffic congestion,

impede vehicle movement, pose a hazard to roadway use, or interfere with emergency vehicle access. The impact would be reduced to a less-than-significant level through the implementation of the prescribed mitigation.

Mitigation Measures

Measure 4.16.2: Implement Mitigation Measures 4.16.1a and 4.16.1c.

Impact Significance After Mitigation: Less than significant

Impact 4.16.3: Project construction would affect general and emergency traffic access to the WWTP, the adjacent shooting range, and the Merced Wildlife Management Area. (Less than Significant)

Construction of the Project would require construction vehicles to enter and leave construction staging areas and access roads to the Project site. During the construction of the new access road, access disruptions would be limited to the south end of Gove Road. At certain times, construction vehicles may temporarily block local traffic as they maneuver in and out of the access point on Gove Road. Occasional short-term delays of up to 15 minutes may occur. This impact would be less than significant.

Mitigation: None required.

Impact 4,16.4: Project construction would result in significant disruptions to transit service. (Less than Significant)

No transit routes are routed along Gove Road. Local transit services utilized by residents located along the truck route illustrated in Figure 2-9 would be still be available to current riders and would largely be unaffected by the Project. Impacts to transit service are considered less than significant.

Mitigation: None required.

Impact 4.16.5: Project construction would generate a need for construction crew parking. (No Impact)

The Project would generate a need for parking for construction workers. Assuming each worker drives alone to each day's work location, a total of 88 temporary parking spaces would be needed. Given the extensive area available for onsite parking, no offsite parking would be required. Since the Project would not result in the loss of available parking area, no impact is expected.

Mitigation: None required.

Impact 4.16.6: Project construction would increase wear and tear on the access routes used by construction vehicles to access the Project work site. (Potentially Significant)

The use of large trucks to transport equipment and material to and from the Project site could affect access road conditions by increasing the rate of road wear. The degree to which this impact would occur depends on the design (pavement type and thickness) and the existing condition of the road. Major arterials and collectors are designed to accommodate a mix of vehicle types, including heavy trucks. The potential impacts are expected to be negligible on those roads. Rural streets are generally not built with a pavement thickness that will withstand substantial traffic volumes. This impact is considered potentially significant.

Mitigation Measure

> **Measure 4.16.6:** Prior to construction, the City's shall assess current road conditions for the Project construction haul routes including the local access roads and identify post-construction road restoration requirements. An agreement shall be entered into by the County prior to construction that details suitable post-construction road restoration improvements. The City shall fund roadway repairs or rehabilitation as necessary such that post-construction requirements are met.
>
> **Impact Significance After Mitigation:** Less than significant.

4.17 Public Services

4.17.1 Significance Criteria

The Project would result in a significant impact on public services if it would 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 any of these public services: fire protection, police protection, schools, parks, or other public facilities.

4.17.2 Impacts and Mitigation Measures

The Project would not require the construction of other new or expanded governmental service facilities. Project features discussed in Chapter 2, Project Description, would not generate additional demands for public services that would require new or altered facilities, including police and fire protection. No impact to public services would occur.

The Project would not generate new commercial or residential demand, which could affect service ratios, response times, or other performance objectives. No additional growth beyond that planned in the City's adopted General Plan would occur as a result of the Project, and therefore, the additional demand accommodated by the Project would not adversely impact schools, parks, or other public facilities. Therefore, no direct significant impacts to public services would occur.

Chapter 6, Growth-Inducing Impacts, addresses the potential growth-inducing effects of the Project. As discussed, increasing the WWTP capacity would remove an obstacle to population growth and development, enabling the continued build-out of the City SUDP and the UC-Merced LRDP. As noted in this discussion, continued build-out of these plans could place greater demand on public services in the respective planning areas.

4.18 Public Health and Safety

4.18.1 Significance Criteria

A project would be considered to have a significant adverse impact on the environment if it would:

- 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;
- Interfere with safe operations of a nearby airport of result in a safety hazard for people residing or working in the project area, due to its proximity to an airport;
- Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code §65962.5 and, as a result, create a significant hazard to the public or the environment;
- Interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

4.18.2 Methodology

The presence of hazardous materials in the Project area was determined through preliminary record searches and examination of readily available information. Although hazardous materials exist at the WWTP, the low quantities used and the City's current compliance with applicable State and Federal hazardous materials laws and regulations which function to minimize potential impacts associated with these existing hazardous materials. In addition, the WWTP is not located on the DTSC Hazardous Waste and Substances Site List (Cortese List). Therefore, the impacts

discussed below focus on construction activities and the potential for accidental spill and/or release of hazardous materials during construction or transport that could affect public health and safety.

4.18.3 Impacts and Mitigation Measures

Impact 4.18.1: Construction of the Project may expose construction workers, the general public, and the environment to pre-existing hazardous materials contamination. (Potentially Significant)

The Project would require extensive excavation and disturbance of surface soils. Past historic land uses may have resulted in the contamination of soil and/or groundwater. Construction activities inherent to the Project could encounter areas of unrecorded contamination associated with past land uses (e.g., industrial waste). Dewatering of contaminated groundwater from trenches and excavations could expose individuals and the environment to hazardous levels of contaminants. Similarly, body contact with contaminated soil could lead to inadvertent exposure. This impact is considered potentially significant.

Mitigation Measures

Measure 4.18.1a: If contaminated soil and/or groundwater or suspected contamination were encountered during Project construction, work shall be halted in the area, and the type and extent of the contamination shall be identified. A contingency plan to dispose of any contaminated soil or groundwater should be developed through consultation with the appropriate regulatory agencies. If dewatering were to occur during Project construction, the RWQCB should be consulted for any special requirements such as containing the water until it can be sampled and analyzed to ensure that no contaminants are in the groundwater that could be released into the MID drainage system.

Hazardous materials associated with construction equipment, such as fuels, oils, antifreeze, coolants, and other substances could adversely affect water quality if released to surface waters. If precautions are not taken to contain contaminants, construction could produce contaminated stormwater runoff (nonpoint source pollution), a major contributor to the degradation of water quality. In addition, hazardous materials associated with construction equipment could adversely affect surface and groundwater quality if spilled or stored improperly. Without mitigation, construction of the Project could result in potentially significant impacts.

Measure 4.18.1b: Implement Measure 4.2.1b.

Impact Significance After Mitigation: Less than significant

Impact 4.18.2: During construction, there is a risk of exposure to hazardous materials such as fuel and other chemicals used for excavation and construction activities. (Potentially Significant)

During excavation and construction activities, it is anticipated that limited quantities of miscellaneous hazardous substances, such as gasoline, diesel fuel, and hydraulic fluid would be handled on the construction site. Various contractors for fueling and maintenance purposes could use temporary bulk above ground storage tanks as well as storage sheds/trailers. The potential for an accidental release exists during handling and transfer from one container to another. Depending on the relative hazard of the hazardous material, if a significant spill were to occur, the accidental release could pose a hazard both to construction employees and the environment. Although typical construction management practices limit and often eliminate the impact of such accidental releases, there is a possibility of a spill or a release with the temporary onsite storage of hazardous materials. This impact is considered potentially significant. Implementation of the prescribed mitigation would reduce the impact to a less-than-significant level.

Mitigation Measure

Measure 4.18.2: Prepare a Spill Prevention and Containment Plan. The City shall ensure, through the enforcement of contractual obligations, that contractors transport, store, and handle construction-related hazardous materials in a manner consistent with relevant regulations and guidelines, including those recommended and enforced by the Department of Transportation, California RWQCB, the local fire departments, and the local environmental health department.

Recommendations shall include as appropriate transporting and storing materials in appropriate and approved containers, maintaining required clearances, and handling materials using applicable federal, state, and/or local regulatory agency protocols. In addition, all precautions required by the RWQCB-issued NPDES construction activity stormwater permits would be taken to ensure that no hazardous materials enter any nearby waterways.

In the event of a spill, the City shall ensure, through the enforcement of contractual obligations, that all contractors immediately control the source of any leak and immediately contain any spill using appropriate spill containment and countermeasures. If required by the local fire departments, the local environmental health department, or any other regulatory agency, contaminated media shall be collected and disposed of at an offsite facility approved to accept such media.

Impact Significance After Mitigation: Less than significant.

Impact 4.18.3: The Project could interfere with an emergency response or evacuation plan. (Less than Significant)

The Project is not expected to involve any activities that would interfere with emergency response plans or evacuation plans in place through the California OES, the City, or the County. Project construction could temporarily interfere with emergency vehicle access to the WWTP for periods up to 15 minutes when the south end of Gove Road is being reconstructed. This impact is considered to be less than significant.

Mitigation: None required.

Impact 4.18.4: Construction of the Project would not interfere with safe operations of the Merced Municipal Airport or result in a safety hazard for people residing or working in the Project area, due to its proximity to the airport. (No Impact)

The Merced Municipal Airport lies two miles northwest of the WWTP. As stated in Chapter 2, Project Description, expanding the rated capacity of the WWTP would involve constructing numerous facilities and the new effluent outfall pipeline. Construction of the Project would be located more than two miles from the airport. Construction trucks would travel on routes close to the airport runways; however; haul trips are not expected to interfere with airport operations. As a result, no impact would occur.

Mitigation: None required.

Impact 4.18.5: Construction of the Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. (Potentially Significant)

The Project is located in a rural area where the risk of wildland fire is considered to be low to moderate. During construction, staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. Any construction equipment that normally includes a spark arrester would be equipped with an arrester in good working order. Nonetheless, the potential exists for construction equipment and vehicles to come in contact with heavily vegetated areas on the site, thereby igniting dry vegetation.

Mitigation Measures

> **Measure 4.18.5a:** The City shall designate and ensure through the enforcement of contractual obligations, that during construction, staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. The City shall keep these areas clear of combustible materials in order to maintain a firebreak. Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.
>
> **Measure 4.18.5b:** Construction crews shall be required to carry sufficient fire suppression equipment to ensure that any fire resulting from construction activities is immediately extinguished. All off-road equipment using internal combustion engines shall be equipped with spark arrestors.
>
> **Impact Significance After Mitigation:** Less than significant.

Impact 4.18.6: The implementation of the WWTP Expansion Project could present additional vector concerns. (Less than Significant)

WWTPs are commonly identified as a vector control problem due to the presence of various treatment ponds, which provide suitable habitat for the production of mosquitoes. Vector control operations are currently employed at the WWTP to control any outbreak of mosquito-borne disease (e.g., West Nile Virus) or a nuisance infestation of mosquitoes in a community. Although, the addition of new treatment facilities would provide an expanded area for potential habitat, current vector control operations would be expanded to ensure adequate controls. For this reason, this impact is considered less than significant.

Mitigation: None required.

Impact 4.18.7: The use of reclaimed wastewater effluent carries the potential for human contact. (Less than Significant)

Implementation of the Project would be expected to result in the seasonal irrigation of additional lands with disinfected tertiary recycled water. Under Title 22 reuse standards, all surface runoff from irrigation by reclaimed water must be confined to the water use areas, unless the runoff does not pose a public health threat and is authorized by the regulatory agency. By Department of Health Services definitions, disinfected tertiary recycled water is defined as filtered and subsequently disinfected wastewater that exhibits extremely low levels of coliform bacteria and turbidity. In considering the strict regulatory framework developed under Title 22 in conjunction with the treatment processes proposed under the Project, impacts to human health as a result of the use of reclaimed water on nearby agricultural lands is considered less than significant.

Mitigation: None required.

4.19 Population and Housing

4.19.1 Significance Criteria

A population and housing impact of the Project would be considered significant if it met any of the following criteria.

- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

4.19.2 Impacts and Mitigation Measures

Impact 4.19.1: The Project would displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere. (No Impact)

There is no existing housing located within the immediate project area. Therefore, the construction of the project would not result in the displacement of existing residential housing. No impact would occur.

Mitigation: None required.

4.20 Land Use and Zoning

4.20.1 Significance Criteria

The impact analysis presented below evaluates potential Project impacts on current land uses as a result of facility siting, construction, and/or operation. Impact significance criteria are presented for each of these phases of impact. Implementation of the Project would result in a significant land use impact if it would:

- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect
- Result in land uses that are incompatible with current and planned land uses adjacent to Project facilities
- Result in substantial nuisance effects on sensitive land uses that would disrupt use over an extended time period
- Result in the disruption or division of the physical arrangement of an established community

4.20.2 Methodology

Land use impacts associated with the Project would, in most instances, be short term and occur during the construction phase of the Project. Construction activities could result in temporary disruptions to adjacent land uses resulting from nuisance effects such as noise, dust, construction traffic, and possible interference of access to locations along Gove Road during construction activities. Additionally, the Project may require the removal or relocation of improvements (e.g., irrigation laterals). Once operational, the Project would have negligible long-term or permanent land use impacts. Issues relating to nighttime lighting and potential noise are

discussed in Sections 4.9, Noise, and 4.8, Aesthetics. Issues concerning the conversion of important farmlands are covered under Section 4.14, Environmentally Sensitive Areas.

4.20.3 Impacts and Mitigation Measures

Impact 4.20.1: The Project would be consistent with applicable land use goals, policies, and objectives of the City's and County's General Plans. (Less than Significant)

The Project would be consistent with the General Plan goals and objectives adopted by the City to ensure the adequate provision of wastewater treatment service. The Project is responding to current and planned development demands on wastewater treatment capacity rather than installing new capacity that would otherwise exceed the City's needs.

The Project is consistent with policies contained in the Public Facilities Element of the current General Plan, which support the improvement of City's infrastructure and encourage the efficient and cost-effective delivery of public service. More specifically, the Project would be consistent with policies P-1.1, P-1.2, P-1.4, and P-1.5 which support these goals, and direct the Public Works Department to provide adequate public infrastructure to meet the needs of future development, encourage the utilization of existing infrastructure to the maximum extent possible, and accommodate future needs for reclaimed water.

The Project would require the City to acquire 46 acres north and east of the City's WWTP property for public use to enable the expansion of the WWTP. The expansion area is currently designated for Agricultural use under the County's 1990 General Plan. Goals and polices applied to the agricultural use focus on avoiding the placement of urban-type land uses, which may be disruptive to the agricultural economy, near agriculturally zoned lands. As the WWTP is an existing use, its expansion would not be disruptive to adjacent agricultural uses. Further, because the acquisition of 46 acres would reduce the northern property's size from 380 to 338 acres, continued agricultural operations on the adjacent property would remain viable.

Once constructed, maintenance activities would not substantially deviate from baseline conditions. In this context, the Project would not conflict with policies adopted for the purpose of avoiding or mitigating an environmental effect and this impact is considered less than significant.

Mitigation: None required

Impact 4.20.2: Implementation of the Project would create land uses that are incompatible with current and planned land uses adjacent to Project facilities. (Less than Significant)

Expansion of the WWTP would not create a new land use; it would continue existing land uses and allow the capacity of the WWTP to increase for serving future community demands. WWTP expansion requires that 20 acres of agricultural lands be displaced and incorporated into the

WWTP. The effects of this change are addressed in Section 4.14, Environmentally Sensitive Areas, regarding impacts to agricultural resources.

The surrounding agricultural land uses do not conflict with operation of the WWTP. There is no apparent conflict because of traffic, noise, odors, or light and glare emanating from the WWTP. Expanding the WWTP would have a less-than-significant impact on land use and zoning.

Mitigation: None required

Impact 4.20.3: Construction of the Project would create an obstruction that could physically divide an established community. (No Impact)

The WWTP expansion facilities would be constructed on and adjacent to the WWTP site located outside the Merced City limits on property surrounded by lands in agricultural production. As such, the Project would not be constructed within an established residential community. Expansion of the WWTP would have no impact by physically dividing a established community.

Mitigation: None required.

Impact 4.20.4: Implementation of the Project would conflict with a Williamson Act contract or adjacent agricultural zoning. (No Impact)

The WWTP project area is located on agricultural property that is not covered under the provisions of an active Williamson Act contract.

Mitigation: None required.

Impact 4.20.5: Construction of the Project would impact farmland and/or adjacent agricultural operations. Additionally, routine maintenance over the long term could potentially conflict with these operations. (Potentially Significant)

Lands areas north of the WWTP and along Gove Road are currently under agricultural production. Based on review of aerial photographs and field reconnaissance, these agricultural areas include mainly irrigated pasture and row crops. Although the expansion area and access road alignment are minimal in terms of spatial extent, construction activities would require the removal and relocation of existing irrigation structures, drainage facilities, and topsoil. This temporary loss in agricultural productivity within the vicinity of the expansion area could adversely affect ongoing operations and would be considered a potentially significant impact. Implementation of the prescribed mitigation would mitigate impacts to local agricultural operations to a less-than-significant level.

Mitigation Measure

Measure 4.20.5: The City shall consult with all affected landowners where the proposed expansion area would encroach onto productive farmland. As part of the easement acquisition process, the City and affected landowners shall negotiate an agreed-upon compensation for the loss of any existing pasture and/or row crops currently in production. During these consultations the City shall also, in conjunction with landowners' input, identify areas within the expansion area that could be left in agricultural production. Compensation for the loss of crops and associated revenues would be up to the provisions of law.

Impact Significance After Mitigation: Less than significant
