20 UTILITIES AND SERVICE SYSTEMS

This chapter provides an evaluation of the potential environmental effects by and to utilities and service systems, including water supply and treatment, wastewater collection and treatment, and solid waste collection and disposal, with implementation of the proposed 2030 Merced County General Plan (2030 General Plan). As established in the Notice of Preparation for the proposed 2030 General Plan (see Appendix A, *Notice of Preparation)*, urban development and other activities subject to the Plan may result in strains on existing service systems, and potential environmental degradation of the lands, waters, and communities that supply and receive waste products and discharges. Storm drainage services are discussed and evaluated in Chapter 13, *Hydrology and Water Resources*, of this Draft PEIR.

The following environmental assessment includes a review of the capacity and capabilities of the existing water supply, wastewater, and solid waste utility systems potentially affected by the implementation of the 2030 General Plan, including descriptions of existing water usage and distribution, wastewater collection and treatment, and landfill capacity in the county. Existing and future utility and service system conditions were compiled and analyzed based on California Environmental Quality Act (CEQA) assessment criteria.

This analysis also includes a review of applicable regulations, requirements, plans, and policies from the following state and county sources:

- State Water Resources Control Board
- California Department of Public Health
- California Department of Water Resources
- CalRecycle (formerly Integrated Waste Management Board)
- Merced County Division of Environmental Health
- Merced County Public Works Department
- 2000 Merced County General Plan.

Much of the existing conditions information was taken from the Merced County General Plan Background Report sections on utilities and service systems. Rules and regulations relevant to water supply, wastewater collection and treatment, and solid waste collection and disposal were also identified and reported on in the Background Report based on review of federal, state, and local regulations. Potential impacts to the environment related to the utilization and expansion of utility and service systems to meet demands were determined by assessing potential development that would likely be constructed under buildout of the 2030 General Plan.

20.1 SETTING

The environmental and regulatory setting of Merced County with respect to public utilities and service systems is described in detail in the General Plan Background Report (Merced County 2007; updated 2012). Portions of the environmental and regulatory setting, and the evaluation of water supply, rely upon a Technical Memorandum prepared by Nolte Associates, Inc. entitled, "Updated Qualitative Comparison of Water Supply and Demands in Merced County" (Nolte 2012). These documents are incorporated by reference into this Draft PEIR pursuant to State CEQA Guidelines

Section 15150 as though fully set forth herein. The updated Background Report document and Technical Memorandum are available for download from the Merced County General Plan website:

http://www.co.merced.ca.us/index.aspx?NID=1926.

Copies of the Background Report and Technical Memorandum may also be viewed during standard business hours (8:30 a.m. to 4:30 p.m.), Monday through Friday, at the Merced County Planning and Community Development Department, 2222 M Street, Merced, California 95340, and at the Main Branch of the Merced County Library located at 2100 O Street, Merced California 95340.

20.1.1 ENVIRONMENTAL SETTING

The Background Report's discussion of utility and service systems relevant to this analysis includes:

- Water Supply and Delivery (Background Report Section 7.2)
- Wastewater Collection/Disposal (Background Report Section 7.3)
- Solid Waste (Background Report Section 7.5).

The major discussion items and findings relevant to utility and service systems in the Background Report include the following:

WATER SUPPLY AND DELIVERY

- Agriculture is the primary consumer of water in Merced County, with the majority of its supply coming from outside of the county through the Delta-Mendota Canal, the San Luis Canal, the California Aqueduct, and controlled portions of the Merced and San Joaquin Rivers.

- The lesser municipal water demands in unincorporated areas of the county typically rely on groundwater supplied by small domestic wells, isolated utility systems, or irrigation districts. In total there are 13 larger public water systems and 124 smaller systems (less than 200 service connections).

- Declines in groundwater basin storage and groundwater overdraft are recurring problems in the county. Measures for ensuring the continued availability of groundwater for municipal needs have been identified and planned in several areas of the county, principally within the Merced and Turlock groundwater basins. The measures include groundwater conservation and recharge, and supplementing or replacing groundwater sources for irrigation with surface water (Merced Irrigation District 2008; Turlock Groundwater Basin Association 2008).

- The 2000 General Plan deferred water supply, treatment, and distribution planning to the various service providers, resulting in minimal coordination between the service entities and the County regarding comprehensive planning to supply increasing demands for water services as land was developed.

- New Integrated Regional Water Management Plan efforts, funded by the Department of Water Resources, are now underway in Merced County (2011-2013) to improve comprehensive planning.

WASTEWATER COLLECTION AND DISPOSAL

- The unincorporated areas of Merced County are generally served by small community sanitary sewer systems, sometimes broken out even further into sewer collection services and contracted wastewater treatment and disposal.

- Sanitary sewer service districts and the communities that they serve include:

  - √ **Delhi County Water District:** In addition to domestic water service, the Delhi County Water District (DCWD) also provides sanitary sewer collection and treatment services to the majority of residents within its district.
  - √ **Franklin County Water District:** Provides sanitary sewer collection and treatment for residents in the community of Franklin-Beachwood along State Route 99.
  - √ **Hilmar County Water District:** Provides domestic water service and sanitary sewer collection and treatment for the community of Hilmar, along with stormwater collection and disposal.
  - √ **Le Grand Community Services District:** Provides domestic water service and sanitary sewer collection and treatment via an expanded wastewater treatment facility for the community of Le Grand.
  - √ **Midway Community Services District:** Collects and conveys raw wastewater to the City of Dos Palos for treatment and disposal at a facility operated by a Joint Powers Authority (JPA), and delivers potable water obtained through a similar JPA.
  - √ **Planada Community Services District:** Provides domestic water and sanitary sewer collection and treatment for the community of Planada.
  - √ **San Luis Water District:** District plans to provide sanitary sewer collection and treatment to the communities of Fox Hills and the Villages of Laguna San Luis, including treated, reclaimed water for irrigation of a golf course and parks and trails. The district also provides domestic water to Santa Nella, and plans to provide domestic water to Fox Hills and the Villages at Laguna San Luis projects.
  - √ **Santa Nella County Water District:** Provides domestic water and sanitary sewer collection and treatment for the community of Santa Nella. Raw water is transferred from the San Luis Water District for treatment and distribution by the San Nella CWD.
  - √ **Snelling Community Services District:** Provides sanitary sewer collection and treatment for the community of Snelling.
  - √ **South Dos Palos County Water District:** Similar to the Midway Community Services District, the SDPCWD conveys raw wastewater to the City of Dos Palos for treatment and disposal through a JPA, and delivers potable water obtained through a similar JPA.
  - √ **Winton Water and Sanitary District:** Currently conveys raw wastewater to the City of Atwater for treatment and disposal, but is investigating the construction of a tertiary treatment facility to serve the Castle Airport/Winton area. The district also provides potable drinking water to Winton.

- Many of the smaller communities within the county lack sanitary sewer infrastructure, relying instead on individual and community on-site wastewater treatment systems (OWTS)[1] for wastewater disposal. The maintenance and upkeep of these systems are dependent upon individuals or groups of property owners. These communities include Ballico, Volta, Cressy, Dos Palos Y, El Nido, Stevinson and Tuttle.

- Similar to water supply and delivery, the 2000 County General Plan deferred wastewater collection, treatment, and disposal planning to the various local service providers, resulting in minimal coordination and comprehensive planning for increased service capacities or capabilities as demands increased from new development.

- Community wastewater treatment and disposal systems typically fall into two categories: treatment plants with subsequent land application, or tertiary treatment for subsequent unrestricted Title 22 use/discharge to surface water.

- With limited exceptions, County water and wastewater facilities were reported to be adequate in 2007 under existing conditions, but limited in capacity for any future growth requiring construction of additional facilities as part of any future development.

SOLID WASTE COLLECTION AND DISPOSAL

- There are two active solid waste disposal-landfill facilities in Merced County: the Highway 59 Disposal site and the Billy Wright Landfill (BWL). Both sites are owned and operated by the Merced County Association of Governments (MCAG) Regional Waste Management Authority. Both facilities provide composting, and limited resource recovery activities. Some household hazardous waste is accepted at the both disposal sites for disposal outside of Merced County.

- The Highway 59 disposal site serves the cities of Merced, Atwater, and Livingston, as well as the unincorporated communities of Eastern Merced County. The BWL facility serves the cities of Dos Palos, Gustine, and Los Banos, as well as the Western Merced County unincorporated communities.

- Drop boxes and curbside collection are the primary methods for solid waste collection with private haulers, Gilton Disposal Services and Winton Disposal Services, providing the majority of waste hauling in the unincorporated areas.

- At existing and planned disposal rates, the capacity of the Highway 59 landfill will be reached in approximately 2050. The capacity of the Billy Wright landfill, following implementation of a recently approved expansion plan, will be reached in approximately 2054.

[1] The State Water Resources Cotrol Board defines "onsite wastewater treatment system(s)" (OWTS) as individual disposal systems, community collection and disposal systems, and alternative collection and disposal systems that use subsurface disposal. Septic tanks and leach fields, typically used in rural areas of Merced County are a type of OWTS.

20.1.2 REGULATORY SETTING

The Background Report's discussion of the regulatory setting for utility and service systems includes the following federal, state, and regional agencies and regulations:

FEDERAL

Legislation/Regulation

- **Safe Drinking Water Act.** The Safe Drinking Water Act (SDWA) (4 USC Section 201 et seq.), administered by the United States Environmental Protection Agency (EPA) in coordination with the State Department of Health Services (DHS), is the main federal law that ensures the quality of Americans' drinking water. In California the DHS has been reorganized into the California Department of Public Health, with drinking water regulations mandated under its Division of Drinking Water and Environmental Management. Under the SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.

- **Clean Water Act (CWA).** The CWA (33 USC Section 1251 et seq.) is the cornerstone of surface water quality protection in the United States. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Section 303 of the CWA requires states to adopt water quality standards for all surface water of the United States. In 1972, the CWA was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges, including discharges associated with construction activities, under the NPDES program. The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB) are responsible for ensuring implementation and compliance with the provisions of the federal CWA.

- **San Joaquin River Restoration Settlement Act**. The San Joaquin River Restoration Settlement Act (Public Law 111-11; March 30, 2009) enacted the San Joaquin River Restoration Program (SJRRP) with two mandates: 1) to restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River from just below Friant Dam to its confluence with the Merced River, and 2) to reduce or avoid adverse water supply impacts to the Friant Division long-term water contractors that may result from interim and restoration flows (SJRRP 2009). The Settlement Act requires both interim flows and restoration flows. The environmental review process for the complete SJRRP is ongoing; a public draft Program Environmental Impact Report/Environmental Impact Statement was made available for public review and comment through September 2011. Comments received during that period were considered by the lead agencies, and responses to comments will be included in the Final PEIS/R. The Final PEIS/R was released to the public on July 27, 2012.

Regulatory Agencies

- **U.S. Environmental Protection Agency.** The EPA is responsible for developing and enforcing regulations that implement environmental laws enacted by Congress. It is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits, and for monitoring and enforcing compliance. The EPA Office of Wastewater Management (OWM) supports the Federal Water Pollution Control Act (Clean Water Act) by promoting effective and responsible water use, treatment, disposal, and management, and by encouraging the protection and restoration of watersheds. The OWM is responsible for directing the National Pollutant Discharge Elimination System (NPDES) permit, pretreatment, and municipal bio-solids management programs (including beneficial use) under the Clean Water Act. In 1990, EPA published final regulations establishing stormwater permit application requirements known as Phase I of the NPDES program that cover medium to large municipal separate storm sewer systems (MS4) serving populations greater than 100,000, industrial sites, and construction sites greater than five acres. Phase II of the NPDES program requires operators of small MS4s (serving less that 100,000) in urbanized areas and small construction sites between one and five acres to be covered under a NPDES permit, and to implement programs and practices to control polluted stormwater runoff. The Phase II Small MS4 General Permit is undergoing modification and renewal; a new tentative draft is available on the SWRCB website for public review and comment through July 23, 2012, and so won't likely be adopted by the State Water Resources Control Board until 2013.

- **Federal Emergency Management Act (FEMA).** FEMA is the federal agency that oversees floodplains, and manages the National Flood Insurance Program (NFIP) adopted under the National Flood Insurance Act of 1968. FEMA's regulations establish requirements for floodplain management. FEMA prepares Flood Insurance Rate Maps (FIRM) that indicate the regulatory floodplain to assist communities such as Merced County with land use and floodplain management decisions in order to meet the requirements of the NFIP. FIRMS for Merced County were recently updated under the Map Modernization Program, and became effective on December 2, 2008 (FEMA 2008).

STATE

Legislation/Regulation

- **California Water Code.** The California Water Code establishes the governing law pertaining to all aspects of water management in California. The special districts of Merced County that provide potable water service operate in accordance with the enabling legislation contained in the applicable sections of the California Water Code (e.g., Sections 20500, 30000, 34000, 61000, and uncodified).

- **Porter-Cologne Act** (Section 13000 et seq. of the California Water Code). The Porter-Cologne Act is California's primary body of regulation addressing all aspects of surface water and groundwater quality in the state. The Act establishes the State Water Resources Control Board and the Regional Water Quality Control Board. The Central Valley Regional Water Quality Control Board has jurisdiction over waters within Merced County.

- **Title 22 of California Code of Regulations.** Title 22 regulates the use of reclaimed wastewater and its allowable application on edible and/or food crops, orchards, vineyards, parks, playgrounds, and landscaping. Regulation of reclaimed water is governed by the nine RWQCBs and the California Department of Public Health.

- **Title 27 of California Code of Regulations.** In accordance with the California Code of Regulation (CCR) Title 27, Sections 21600 through 21900, solid and hazardous waste transfer and disposal facilities in Merced County are regulated jointly by the California Regional Water Quality Control Board, Central Valley Region, and the CalRecycle (formerly the California Integrated Waste Management Board). Compost facilities are also jointly regulated under CCR Title 14, Sections 17850 to 17869. Permit requests and Reports of Waste Discharge and Disposal Site Information are submitted to the RWQCB and CalRecycle, respectively, and are used by the two agencies to review, permit, and monitor these facilities. Both the RWQCB and CalRecycle regulate facilities individually and through local enforcement agencies staffed by Merced County employees. In Merced County, the local enforcement agency is the Department of Public Health, Division of Environmental Health (DEH). The Merced County Public Works Department and the MCAG Regional Waste Management Authority assist in supporting the Merced County solid waste landfill diversion goals.

- **California Integrated Waste Management Act.** This act established the California Integrated Waste Management Board (CIWMB) (now CalRecycle), and established priorities for the CIWMB and local agencies regarding source reduction; recycling and composting; and environmentally safe transformation and land disposal. The Act also includes a requirement that each county prepare, adopt, and submit to the Board an Integrated Waste Management Plan (IWMP). Waste Diversion Mandates as included in the California Integrated Waste Management Act as originally adopted required that each IWMP include an implementation schedule that demonstrated diversion of 25 percent of all solid waste from landfill or transformation facilities by January 1, 1995 through source reduction, recycling, and composting activities; and, diversion of 50 percent of all solid waste by January 1, 2000 through source reduction, recycling, and composting activities.

  AB 341 Solid Waste: Diversion (2011) amended the Integrated Waste Management Act by requiring CalRecycle to issue a report to the Legislature that included strategies and recommendations that would: 1) enable the state to divert 75 percent of the solid waste generated in the state from disposal by January 1, 2020; 2) require businesses that meet specified thresholds to arrange for recycling services by January 1, 2012; 3) streamline the amendment process for non-disposal facility elements, by allowing changes without review and comment from a local task force; and (4) allow a solid waste facility to modify their existing permit, instead of having to undergo a permit revision, under specified circumstances. One effect of this increased diversion goal is to extend the useful life of landfills throughout the state.

- **Urban Water Management Planning Act.** In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code Sections 10610 – 10656). The act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet annually, should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various

categories of customers during normal, dry, and multiple dry years. The act also requires that urban water suppliers adopt and submit an urban water management plan at least once every five years to the Department of Water Resources.

- **Integrated Regional Water Management Act** (Senate Bill 1672, 2002; Water Code Sections 10530-10550). The Act encourages and funds local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability. Integrated Regional Water Management (IRWM) is a collaborative effort to manage all aspects of water resources in a region. IRWM differs from traditional approaches to water resource management by integrating all facets of water supply, water quality, wastewater treatment, and flood and stormwater management. IRWM crosses jurisdictional, watershed, and political boundaries; involves multiple agencies, stakeholders, individuals, and groups; and attempts to address the issues and differing perspectives of all the entities involved through mutually beneficial solutions.

  The Merced Region is undertaking development of an Integrated Regional Water Management (IRWM) Plan. This effort was initiated by the Merced Area Groundwater Pool Interests (MAGPI), which currently serves as an interim Regional Water Management Group (RWMG) responsible for developing the IRWM Plan. The Region has received a grant from the California Department of Water Resources (DWR) to prepare a plan that meets statewide IRWM Plan standards. Several technical memoranda relating to water resources and the relationships between land use and water demands were released in June 2012.

- **Safe Drinking Water Act** (Health and Safety Code Section 116270 et seq.). Administered by the California Department of Public Health, Drinking Water Program, the California Safe Drinking Water Act is intended to ensure that the water delivered by public water systems of the state shall at all times be pure, wholesome, and potable. The Act improves laws governing drinking water quality, to improve upon the minimum requirements of the federal Safe Drinking Water Act Amendments of 1996, to establish primary drinking water standards that are at least as stringent as those established under the federal Safe Drinking Water Act, and to establish a program that is more protective of public health than the minimum federal requirements. At the local level, the requirements of this Act with respect to public water systems are administered by the Merced County Division of Environmental Health.

- **Cortese-Knox-Hertzberg Local Governmental Reorganization Act of 2000.** The Cortese-Knox-Hertzberg Local Governmental Reorganization Act of 2000 (Government Code Sections 56000 et seq.) requires California Local Agency Formation Commissions (LAFCo) to conduct municipal service reviews for cities and independent special districts under their jurisdiction in order to evaluate the agency's ability to provide adequate public services.

- **Senate Bills (SB) 610 and SB 221.** SB 610 and SB 221 amended state law in 2002 (California Water Code Sections 10910, et seq.), to improve the link between the information on water supply availability and certain land use decisions made by Cities and Counties. Both statutes require detailed information regarding water availability to be provided to the City and County decision-makers prior to approval of specified large (greater

than 500 dwelling units) development projects. Under SB 610, water assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects as defined in Water Code 10912 subject to CEQA. Under SB 221, approval by a City or County of certain residential subdivisions requires an affirmative written verification of sufficient water supply.

Regulatory Agencies

- **California Department of Public Health.** A major component of the California Department of Public Health, Division of Drinking Water and Environmental Management is the Drinking Water Program which regulates public water systems. Regulatory responsibilities include the enforcement of federal and state Safe Drinking Water Acts, the regulatory oversight of approximately 8,700 public water systems, the oversight of water recycling projects, issuance of water treatment permits, and certification of drinking water treatment and distribution operators.

- **California Department of Water Resources.** The California Department of Water Resources (DWR) is responsible for preparing and updating the California Water Plan, which is a policy document that guides the development and management of the state's water resources. The plan is updated every five years to reflect changes in resources and urban, agricultural, and environmental water demands. The plan was recently updated, circulated for public review and comment in early 2009, and adopted in late 2009. The California Water Plan suggests ways of managing demand and augmenting supply to balance water supply with demand. One focus of the plan is on scientific strategies to reduce demand and improve delivery of agricultural water, thereby creating more efficient use of agricultural water (DWR 2009).

- **CalRecyle/California Regional Water Quality Control Board, Central Valley Region.** In accordance with the CCR Title 27 Sections 21600 through 21900, solid and hazardous waste transfer and disposal facilities in Merced County are regulated jointly by the California Regional Water Quality Control Board, Central Valley Region (RWQCB) and CalRecycle. Compost facilities are also jointly regulated under CCR Title 14, Sections 17850 to 17869. Permit requests and Reports of Waste Discharge and Reports and Disposal Site Information are submitted to the RWQCB and CalRecycle, respectively, and are used by the two agencies to review, permit, and monitor these facilities. Both the RWQCB and CalRecycle regulate facilities individually and through local enforcement agencies staffed by Merced County employees. In Merced County, the local enforcement agency is the Department of Public Health, Division of Environmental Health (DEH). The Merced County Regional Solid Waste Management Authority operates solid waste landfills within the county and assists in supporting county solid waste landfill diversion goals.

- **State Water Resources Control Board.** In California, the NPDES stormwater permitting program is administered by the SWRCB through its nine RWQCBs. The SWRCB has established a construction General Permit that can be applied to most construction activities in the state. Construction permittees may choose to obtain individual NPDES permits instead of obtaining coverage under the General Permit, but this can be an expensive and complicated process, and its use is generally limited to very large construction projects that discharge to critical receiving waters. In California, owners of construction projects that will disturb more than one acre may obtain NPDES general permit coverage by submitting

Permit Registration Documents (PRD), including a Stormwater Pollution Prevention Plan (SWPPP) under the recently adopted SWRCB Order No. 2009-0009-DWQ (NPDES No. CAS000002). The new California general permit now requires a risk level determination based on site and receiving water characteristics, a range of monitoring, sampling and discharge requirements based on defined risk level, and post-construction runoff reduction requirements that go into effect September 2012.

The SWRCB adopted a Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems in June 2012 (SWRCB 2012). The policy regulates all aspects of the construction and operation of existing and new onsite wastewater treatment systems (OWTS). The purpose of the policy is to allow the continued use of OWTS throughout the state, including Merced County, while protecting water quality and public health. The policy recognizes that responsible local agencies can provide the most effective means to manage OWTS on a routine basis. Therefore as an important element, it is the intent of the policy to efficiently use, and improve upon where necessary, existing local programs through coordination between the state and local agencies. To accomplish this purpose, the policy establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements, and sets the level of performance and protection expected from OWTS.

The policy only authorizes subsurface disposal of domestic strength, and in limited instances high strength wastewater, and establishes minimum requirements for the permitting, monitoring, and operation of OWTS for protecting beneficial uses of waters of the state and preventing or correcting conditions of pollution and nuisance. Finally, the policy also conditionally waives the requirement for owners of OWTS to apply for and receive Waste Discharge Requirements in order to operate their systems when they meet the conditions set forth in the policy. Nothing in the policy supersedes or requires modification of Total Maximum Daily Loads or Basin Plan prohibitions of discharges from OWTS.

According to the SWRCB, If an individual septic system (OWTS) is currently in good operating condition, and it is not near a stream, river, or lake that the state has identified as contaminated with bacteria and/or nitrogen-related compounds, then the policy will have little or no affect on that property owner.

MERCED COUNTY

- **Merced County Division of Environmental Health (DEH).** The DEH regulates the construction and operation of public water systems with fewer than 200 connections, wells, and on-site wastewater treatment systems within Merced County.

- **Merced County Code, Title 9.04 and 9.08** of the General Health and Safety Ordinance and Title 18.32 and 18.44 of the Zoning Ordinance are used to regulate solid waste disposal facilities on a local level. DEH's role in the countywide solid waste management program is to participate with other concerned agencies in the development and continuous updating of the County's Solid Waste Management Plan (SWMP), to enforce solid waste laws, to investigate closed and abandoned landfills, and to investigate citizen complaints regarding solid waste.

20.2 ENVIRONMENTAL EFFECTS

This analysis evaluates whether implementation of the proposed urban development that would occur from buildout under the 2030 General Plan project could result in adverse impacts to utilities and service systems.

20.2.1 SIGNIFICANCE CRITERIA

The following criteria have been established to quantify the level of significance of an adverse effect being evaluated pursuant to State CEQA Guidelines Appendix G: Environmental Checklist Form, Section XVII. Utilities and Service Systems. Implementation of the 2030 General Plan would result in a significant utilities or service system impact if the Plan would:

- Exceed wastewater treatment requirements of the Central Valley Regional Water Quality Control Board. *(XVII.a)*
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. *(XVII.b)*
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. *(XVII.c)*

  This potential effect is evaluated in Chapter 13, Hydrology and Water Resources, of this EIR.

- Have sufficient water supplies available to serve the project from existing entitlements and resources, or need new or expanded entitlements. *(XVII.d)*
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. *(XVII.e)*
- Require new or substantial alteration of existing solid waste disposal facilities, or be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. *(XVII.f)*
- Not comply with federal, state, and local statutes and regulations related to solid waste. *(XVII.g)*

20.2.2 ANALYSIS METHODOLOGY

Evaluation of potential water supply and treatment, wastewater collection and treatment, and solid waste disposal impacts associated with implementation of the proposed 2030 General Plan were based on a review of the Background Reports; applicable federal, state, and regional laws, regulations, codes, and guidelines; and water supply reports and water and wastewater municipal service reviews for Merced County. The evaluation also considered whether the goals and policies in the 2030 General Plan promote adequate planning and oversight of the new facilities that are needed as development occurs to help ensure that existing users and the environment would not be negatively impacted.

Potential impacts related to stormwater conveyance and drainage systems are evaluated in Chapter 13, *Hydrology and Water Resources*, of this Draft PEIR.

20.2.3 ENVIRONMENTAL IMPACTS

The following discussion examines the potential impacts of the proposed project based on the impact threshold criteria described above.

Impact USS-1: Have sufficient water supply resources and entitlements available to accommodate continued development through buildout under the 2030 General Plan.

Existing water supplies that serve agricultural, municipal, and industrial uses may be inadequate to accommodate future water demands within Merced County. This would be a potentially significant impact.

OVERVIEW

The existing water supply for northern and eastern Merced County is obtained from groundwater pumping, and from diversions of the Tuolumne and Merced Rivers. Western Merced County receives federal and state water project deliveries via the Delta Mendota Canal and the California Aqueduct. Implementation of the proposed 2030 General Plan would lead to increased potable water demand for developed urban uses. Urban development, both in the unincorporated county urban areas and within cities, is predicted to require up to an additional 92,000 acre feet per year under full buildout conditions. Of this amount, approximately 26,700 acre feet of the demand would come from planned unincorporated development, primarily from The Villages of Laguna San Luis and the community of Santa Nella (Nolte 2012). (See Tables 20-2 and 20-3.) The preservation and promotion of additional operating agricultural lands under the 2030 General Plan would also likely increase water needs.

Existing water supply sources are already under strain with competition increasing for state and federal surface water supply sources, particularly during times of drought, and declining groundwater levels and recurring groundwater overdraft conditions in many parts of the county, including El Nido, Livingston, and Merced. Several community water districts are already individually implementing projects to alleviate the strain, including the Merced Irrigation District (MID), the Merced Area Groundwater Pool Interests (MAGPI), and the Turlock Groundwater Basin Association (TGBA). These entities have initiated the substitution of surface water for groundwater supplies in some agricultural areas, and implemented conservation projects in order to stabilize groundwater elevation decline. The details of this overview are discussed further in the following sections of this impact statement.

EXISTING CONDITIONS

Water Use

The largest use of water in Merced County is agricultural irrigation, followed by municipal demands and habitat support. Together, municipal demands and habitat support are roughly equal to 5-15 percent of that used for agricultural purposes. Supply sources include local groundwater, surface water, and large-scale state and federally contracted water conveyances. A large portion of the agricultural water comes from outside the county, from surface water sources delivered by the Delta-Mendota Canal, the San Luis Canal, the California Aqueduct, and the Merced and San Joaquin Rivers (Nolte 2012). Merced County sits within the 15,880 square mile San Joaquin River drainage basin, where dams and reservoirs regulate and divert surface water for uses upstream and within the

county. The majority of urban uses east of the San Joaquin River are served by groundwater; west of the river, the majority of the water supplied for urban uses is provided from surface water sources originating north of Merced County and delivered through the canals described above (Nolte 2012).

As stated earlier, agricultural uses demand the largest supply of water to Merced County. Various irrigation districts provide water for agricultural users throughout the county (see Table 20-1). Existing urban water demands for incorporated and unincorporated areas in Merced County based on available data are set forth in Table 20-2, along with estimated future demands based on community urban development plans and an assumed buildout rate of 2,000 gallons per day (gpd) per acre. Urban water demands in Table 20-2 reflect information extracted from previous planning studies, water usage considering population data, and projected water demand assuming development within designated urban community areas.

Table 20-1 Merced County Agricultural Water Demands

Irrigation District	Area Served (acres)	Customers	Existing Water Demand (ac-ft per year)	Comments
Ballico-Cortez Water District (BCWD)[1]	---	---	---	District strictly formed to address declining groundwater levels; it does not provide irrigation services.
Centinella Water District (CWD)[2]	840	---	---	The CWD is located on the northern end of the San Luis Reservoir, and receives Central Valley Project (CVP) water via the Delta-Mendota Canal under an interim contract with the US Bureau of Reclamation (USBR). The water is conveyed to landowners via privately held canals and pipelines. Land within the district is designated as mitigation habitat.
Central California Irrigation District (CCID)	143,400	560	510,000	Covers western Fresno and Stanislaus counties in addition to western Merced County.
Chowchilla Water District (CWD)	85,000	400	133,187	CWD has rights to approximately 43,000 afy of water from the Buchanan Dam, which is operated and maintained by the United States Army Corps of Engineers. In addition, the District has appropriative rights issued by the State Water Resources Control Board to divert water from the Chowchilla River. Further, the District has contracted with USBR to receive CVP surface waters from the Madera Canal at an annual allotment of 215,000 afy. Water supplied from the Madera Canal varies, with an average annual supply of approximately 90,187 afy.
Del Puerto Water District[2]	47,400	---	75,312	Reorganized in 1995, the Del Puerto Water District covers a 50-mile length strip of land on both sides of the Delta-Mendota Canal. Under a long-term contract with USBR, it supplies CVP water via turnouts on the Delta Mendota Canal and privately held conveyance systems.

Table 20-1 Merced County Agricultural Water Demands

Irrigation District	Area Served (acres)	Customers	Existing Water Demand (ac-ft per year)	Comments
Eagle Field Water District	1,325	2	3,539	Receives irrigation water from the CVP via two turnouts on the Delta-Mendota Canal under an interim contract with the USBR. Groundwater wells are used to supplement CVP supply in dry years.
East Side Water District (EWD)[1]	54,000	---	---	Formed specifically to address declining groundwater levels: EWD is not a service provider.
Grassland Water District	51,537	145	varies	Distributes annual allotment of 180,000 acre-feet from USBR for wildlife habitat and wetland use.
Laguna Water District	417	1	400	Annual CVP allotment from USBR is 800 afy.
Merced Irrigation District	163,812	2,223	500,000	Out of 163,812 acres in MID, 116,000 acres are irrigated. The water source is the Merced River. Between 1994 and 2007, MID diversions have ranged between 430,600 – 571,000 afy and averaged about 500,000 afy.
Merquin County Water District	6,000	100	18,211	MCWD purchases water from Stevinson Water District.
Pacheco Water District	4,999	13	12,000	The annual CVP allotment from USBR is 10,080 afy, but the production capacity of PWD facilities is 15,000 afy. Supplemental water is purchased from CCID.
San Luis Water District	66,449	605	90,000	The annual CVP allotment from USBR is 125,080 afy. SLWD also serves approximately 325 M&I customers. Historical use of CVP water for M&I is 1,065 afy. 38,287 of 66,440 acres are currently irrigated.
Stevinson Water District	3,628	2	26,400	SWD obtains water from the Merced River. MCWD a customer of SWD.
Turlock Irrigation District (TID)	150,000	4,900	600,000	TID supplies irrigation water to agricultural customers in Stanislaus and Merced counties, and municipal water to the town of La Grange. Approximately 45,000 acres are within Merced County. The water source is Tuolumne River, supplemented by groundwater in dry years.
Turner Island Water District	7,520	4	21,000	TIWD obtains water from the Eastside Canal, Henry Miller Reclamation District, and wells.

[1] BCWD and EWD do not provide water deliveries; they are districts formed solely to provide groundwater recharge.
[2] Information regarding the Centinella and Del Puerto Water Districts not available.
Source: Nolte Associates, Inc., 2012.

As indicated in Table 20-1, agricultural water purveyors serving Merced County demand approximately 2.0 million acre-feet annually. Several of the purveyors (CCID, CWD, TID) serve areas in addition to Merced County, so not all of the this demand is from Merced County agricultural users.

Table 20-2 Existing and Projected Urban Water Demands in Merced County

City/Community	Existing Water Demands (acre-feet per year)[1]	Year Basis for Existing Demands[1]	Projected Water Demands (acre-feet per year)	Year Basis for Projected Demands
Eastern Merced County				
Atwater	10,734	2006	23,569	buildout (2020)
Livingston	7,730	2006	19,156	2030
Merced	24,166	2008	44,420	2030
Franklin-Beachwood	-	2004	1,974	buildout
Le Grand	336	2007	1,027	buildout
Planada	1,228	2007	1,308	buildout
Winton	1,748	2007	2,787	buildout
Celeste	-	-	116	buildout
Cressy	-	-	498	buildout
El Nido	-	-	147	buildout
Stevinson	-	-	165	buildout
Tuttle	-	-	128	buildout
Total Projected Demands (Eastern Merced County)			*93,500*	
Western Merced County				
Dos Palos (includes Midway, North Dos Palos, South Dos Palos)	1,344	2007	6,769	buildout (2025)
Gustine	1,371	2001	4,226	2020
Los Banos	9,522	2007	21,284	2030
Santa Nella	549	2007	4,794	buildout
Fox Hills	0	-	1,594	buildout
The Villages of Laguna San Luis	0	-	11,146	buildout (2032)
Volta	-	-	707	buildout
Dos Palos Y	-	-	365	buildout
Total Projected Demands (Western Merced County)			*50,900*	
Northern Merced County				
Delhi	1,866	2006	3,448	2025
Hillmar	1,905	2007	2,963	Buildout
Ballico	-	-	411	Buildout
Snelling	-	-	731	Buildout
Total Projected Demands (Northern Merced County)			*7,600*	
Total Projected Demands (rounded)			**154,000**	

Notes:
[1] Information regarding existing water demands not available.
Source: Nolte Associates, Inc., 2012.

Water Purveyors

Domestic water systems within unincorporated Merced County are generally small, isolated systems providing water to individual communities. Agencies providing domestic water service to people residing in the unincorporated areas of Merced County include community service districts, public utility districts, sanitary districts, and irrigation districts. In total, there are 13 larger public water systems (i.e., greater than 200 service connections) and 124 smaller public water systems in the

county. Table 20-3 lists the larger systems and Table 20-4 summarizes some of the smaller municipal systems associated with the unincorporated areas.

Table 20-3 Merced County Large Public Water Systems (>200 service connections)

Municipal Water Systems	Community Water Systems
Eastern Merced County (Merced and Chowchilla Groundwater Basins)	
City of Atwater – Services approximately 27,400 residents and the Castle Commerce Center via 11 groundwater wells and 3 storage tanks. Well depths range from 178 to 670 feet. No surface water contracts. The City of Atwater also treats and discharges roughly 4,500 afy of reclaimed municipal and industrial effluent for agricultural purposes.	**Planada** – The Planada Community Services District (Planada CSD) Provides domestic water to approximately 4,500 residents through 1,227 connections. Five groundwater wells with depths ranging from 296 to 370 feet. Planada also discharges around 6,000 afy of treated effluent for agriculture.
City of Merced – Domestic water to approximately 74,000 residents including the unincorporated community of Celeste and U.C Merced. 22 Groundwater wells and surface water deliveries from MID at a rate of 100 afy. Well depths range from 98 to 833 feet. The city utilizes approximately 8,700 afy of reclaimed wastewater to irrigate cropland and wetland areas.	**Le Grand** – Le Grand Community Services District (LGCSD) provides potable water to approximately 1,800 connections in the unincorporated community. Three groundwater wells with depths ranging from 340 to 416 feet. Le Grand also treats and discharges around 6,000 afy of treated effluent for agriculture.
City of Livingston – Domestic water to approximately 12,400 residents. 8 groundwater wells and 1 storage tank. Well depths range from 300 to 350 feet. No surface water contracts. Livingston also discharges around 6,000 afy of treated effluent for agriculture.	**Meadowbrook (Franklin/Beachwood)** – Unincorporated community receives water through privately held Meadowbrook Water Company. Four groundwater wells with depths ranging from 100 to 358 feet.
	Winton – Winton Water and Sanitary District provides water to approximately 10,613 customers through 2,982 connections from three groundwater wells with depths ranging from 285 to 935 feet. Winton's discharges are included in the City of Atwater's 4,500 afy of treated reclaimed municipal and industrial effluent used for agricultural irrigation.
Western Merced County (Delta-Mendota Groundwater Basin)	
City of Los Banos - Provides water to approximately 35,980 residents via 13 groundwater wells, and 100,000 gallon and 5.0 million gallon storage tanks. Well depths range from 180 to 310 feet. There are no current surface water contracts, however there is the potential to purchase water from the California Aqueduct through the State Water Project.	**Santa Nella** – The Santa Nella County Water District (SNCWD) treats water from the San Luis Water District to service its 500 connections to the unincorporated community. The SNCWD has one groundwater well that is used to blend with treated surface water and service commercial customers along State Route 33.
City of Dos Palos – Provides water to 5,010 residents from surface water obtained via the State Water Project's California Aqueduct, both within the City and in surrounding unincorporated communities through a Joint Powers Authority.	
City of Gustine – Supplies approximately 5,400 residents via 4 groundwater wells and a 750,000 gallon storage tank. Well depths range from 200 to 250 feet.	
Northern Merced County (Turlock Groundwater Basin)	
	Delhi – The Delhi County Water District (Delhi CWD) supplies approximately 8,000 residents in the unincorporated community of Delhi. Source water is 5 groundwater wells ranging in depth from 200 to 425 feet.

Table 20-3 Merced County Large Public Water Systems (>200 service connections)

Municipal Water Systems	Community Water Systems
	Hilmar – The Hilmar County Water District (Hilmar CWD) services approximately 4,900 residents in the unincorporated community of Hilmar. Source water is supplied via 3 groundwater wells, a storage tank and pump station. Well depths range from 125 to 305 feet.

Source: Nolte Associates, Inc., 2012.

Table 20-4 Additional Merced County Water Supply Facilities

Name	Description
Eastern Merced County (Merced and Chowchilla Groundwater Basins)	
Other Rural Centers	Cressy, El Nido, Stevinson, and Tuttle utilize groundwater via private wells.
Western Merced County (Delta-Mendota Groundwater Basin)	
Midway	The Midway Community Services District (Midway CSD) services 186 customers in the unincorporated community via water obtained in a Joint Powers Authority (JPA) with the City of Dos Palos. A JPA is an agreement between two or more agencies to act collectively to provide a public service to each of the agencies.
North Dos Palos	The North Dos Palos Water District (NDPWD) services 50 connections in the vicinity of State Route 33 and Carmellia Avenue via water obtained in a JPA with the City of Dos Palos.
South Dos Palos	The South Dos Palos County Water District (SDPCWD) services 255 connections with water obtained in a JPA with the City of Dos Palos.
Fox Hills	The San Luis Water District (SLWD) is slated to provide water from the Central Valley Project (CVP) for subsequent treatment to service approximately 3,460 approved residential lots in the unincorporated community of Fox Hills.
Other Unincorporated Communities	Volta and Dos Palos "Y" are unincorporated communities that utilize groundwater through various private, industrial and low capacity wells.
Villages of Laguna San Luis	The Villages of Laguna San Luis will coordinate with the San Luis Water District (SLWD) for an increase of Central Valley Project (CVP) allocations, and water purchase and transfer through the San Joaquin River Exchange Contractors Water Authority to serve the projected 15,895 dwelling units in the community. Through a transfer and utilization agreement with SLWD, recycled water would be provided from the Villages wastewater treatment plant for agricultural uses in exchange for CVP water supplies from SLWD.
Northern Merced County (Turlock Groundwater Basin)	
Ballico	The Ballico Community Services District (Ballico CSD) was reported to provide domestic water service to 50 dwellings in 1983.
Snelling	The community relies on low capacity individual groundwater wells.

Source: Nolte Associates, Inc., 2012.

The North Dos Palos District and the communities of Midway and South Dos Palos receive water services from the City of Dos Palos through a Joint Powers Authority (JPA). The University of California, Merced receives water services from the City of Merced. In addition to public water suppliers, there are also private domestic water service providers. The community of Franklin-Beachwood is serviced by the Meadowbrook Water Company, which has four wells in operation. The Merced County Year 2000 General Plan does not discuss domestic water service, and defers

water supply, treatment, and distribution planning to local service providers. Thus, there is little coordination between the service capacities and capabilities of local domestic water service providers and increasing demands for service as a result of land use decisions of private project proponents and Merced County.

Most of the unincorporated areas outside of major communities are designated for agricultural use, and receive their water supply from individual groundwater wells, or from federal and state water projects. The current state of domestic water infrastructure in unincorporated communities of the county is described in detail in Chapter 7 of the Technical Memorandum by Nolte Associates, Inc. (Nolte Associates 2012).

Large-scale wastewater reclamation is practiced in Eastern Merced County. Reclaimed wastewater represents a source of supply for non-potable demands. Wastewater reclamation plants are operated by communities to treat and discharge effluent to the groundwater basin. The City of Merced discharges a total of about 8,700 afy of treated effluent. Approximately 900 afy of treated effluent is discharged to about 600 acres of City-owned cropland and reused. Another 1,400 afy of treated effluent is discharged to about 385 acres of wetlands. The remaining treated wastewater (approximately 6,400 afy) is discharged to the Hartley Slough, where it is utilized for agricultural and environmental purposes. In the future, reclamation may be expanded further. The City of Merced has initiated the construction of a significant upgrade and expansion project to the City wastewater treatment plant (WWTP). The project is expected to increase the capacity of the WWTP to 12 mgd while producing a higher quality tertiary effluent. After tertiary treatment, the water will be suitable for unrestricted reuse for agricultural purposes and urban irrigation. (Nolte Associates 2012)

Similarly, the City of Atwater treats and discharges approximately 4,500 afy of municipal and industrial (M&I) effluent for agricultural purposes. The City of Livingston, and the special districts serving the communities of Le Grand and Planada treat and discharge approximately 6,000 afy of effluent in total. (Nolte Associates 2012)

Groundwater

As described in Table 20-5 and illustrated in Chapter 13, *Hydrology and Water Resources* Figure 13-1, Merced County covers four groundwater basins: the Turlock, Merced, and Chowchilla to the east, and the Delta-Mendota to the west of the San Joaquin River. Groundwater flows generally towards the San Joaquin River alignment along the Central Valley.

Table 20-5 Characteristics of Groundwater Basins in Merced County

Basin	Well Yields, typical (gallons per minute)	Well Depths, (feet)	TDS[1] and Groundwater Zones (milligrams per liter)	Annual Urban Extraction (acre-feet per year)	Annual Agricultural Extraction (acre-feet per year)
Turlock	1,000 – 2,000	50 - 350	• Typical TDS range of 200-500 mg/L • Unconfined, semi-confined, and confined	65,000	387,000
Merced	1,500 – 1,900	100 – 800	• Typical TDS range of 200-400 mg/L • Unconfined and confined within lower consolidated rocks	54,000	492,000
Chowchilla	750 – 2,000	100 – 800	• Typical TDS range of 120-390 mg/L • Increases in TDS significant near the San Joaquin River • Unconfined to confined	6,000	249,000
Delta-Mendota	800 – 2,000	400 - 600	• Typical TDS range of 700-1,000 mg/L • Significant variations in water quality between the upper and lower zones • Unconfined and confined	17,000	491,000
Totals				**142,000**	**1,619,000**

Notes:
[1] TDS=Total Dissolved Solids, a measure of salt concentration in a given volume of water; in this case milligrams per liter.
Source: California Dept. of Water Resources Bulletin 118, 2003.

Groundwater overdraft is a recurring problem in much of the county, with water suppliers often combining surface water sources with groundwater to reduce the problem. The Merced Groundwater Basin has been in decline, with a total of 1,000,000 acre-feet of storage lost from 1980 to 2007, and localized increases in hardness, iron, nitrate, and chloride. Unrealized groundwater levels in the Merced Groundwater Basin have declined by as much as 160 ft from 1970 to 1998. Known groundwater cones of depression exist beneath El Nido, Livingston, and Merced. Modeling and analysis of the Turlock Groundwater Basin from 2000 to 2006 shows a decrease in storage with an average outflow of 541,000 afy, and only 519,000 afy of inflow, with localized increases in hardness, nitrate, chloride, boron, and DBCP (i.e., Dibromochloropropane, a soil fumigant used prior to 1979). Groundwater levels within the Turlock Groundwater Basin have declined by 70 feet in the eastern part of the Basin from 1960-2005. Groundwater levels in the Chowchilla Groundwater Basin levels have declined an average of 40 feet from 1970 to 2000, with localized areas of high nitrate, hardness, iron, and chloride. Trends with the Delta-Mendota Groundwater Basin levels are undetermined at this time, but saline conditions have been recorded within 10 feet of the surface, and there are localized areas of high iron, fluoride, nitrate, and boron (Nolte 2012). Refined high resolution surface and groundwater interaction modeling efforts are planned in 2013 for the Merced Groundwater Basn.

In response to the declining groundwater levels within the Merced Groundwater Basin, MID implemented a series of programs in the 1990s to recharge the aquifer system through in-lieu and direct recharge. In-lieu recharge is the practice of providing surplus surface water to historic groundwater users, thereby leaving groundwater in storage for later use. Direct recharge is the addition of water to a groundwater basin by activities such as putting surface water into constructed basins or injecting water through wells. MID has installed low-head booster pumps on several canals

to provide surface water to higher lands. This has acted to reduce annual pumping from about 24,000 afy to about 8,000 afy, resulting in an annual in-lieu recharge of about 16,000 afy. MID has also implemented a program to provide more responsive service (delivery within 24 hours of demand) to its customers, which has reduced supplemental private pumping from an annual average of 42,000 afy to about 10,000 afy, and resulted in an annual in-lieu recharge of about 32,000 afy. MID also has implemented a groundwater conservation incentive program, which has resulted in the shifting of about 3,000 acres of groundwater irrigated land to surface water irrigation, and resulted in the annual in-lieu recharge of about 9,000 afy. MID implemented the Highlands Pilot In-Lieu Recharge Project, which provides surface water to 450 acres of lands previously irrigated by groundwater only, thus replacing 12 wells and resulting in the annual in-lieu recharge of about 1,500 afy. MID also implemented a pilot direct recharge project at Cressey Basin, which has the potential to recharge up to 10,000 afy when surface water is available. In total, MID has implemented various recharge and conservation projects which, when combined, provide an annual in-lieu recharge of about 60,000 afy.

Similar programs and projects have been initiated in the Turlock Groundwater Basin by the Turlock Groundwater Basin Association. (Nolte 2012)

Both the Merced and Turlock Groundwater Basins have plans with detailed management prescriptions from conjunctive use, water conservation, and alternative water supply considerations. The Merced Groundwater Basin Groundwater Management Plan Update – Groundwater Management Plan Element included the following elements related specifically to groundwater overdraft (MID 2008):

a. Element 5 – Mitigation of Groundwater Overdraft:

    1. Coordinate land use planning with local land use planning authorities to assess and mitigate future land use impacts to groundwater recharge, and
    2. Improve surface water deliveries to consumers, and encourage consumers to use surface water supplies for irrigation in place of groundwater pumping. Direct recharge was investigated near Cressey Basin and additional investigation is needed, also encourage in-lieu recharge of groundwater.

b. Element 8 – Facilitating Conjunctive Use:

    1. Conjunctive use occurs when surface water supplies vary from year to year while the demand for water remains constant. In years with abundant surface water supply, surface water is used to recharge groundwater. The groundwater can then be stored until dry years when surface water supplies are not sufficient and groundwater is used to augment supplies. Recharge of groundwater is achieved through in-lieu recharge, percolation through water conveyance features, recharge through irrigation practices, or through groundwater injection into an aquifer.

The Turlock Groundwater Basin covers a comparatively small area of Merced County compared to the Merced Groundwater Basin. The Turlock Groundwater Basin Draft Groundwater Management Plan states that the Turlock Groundwater Basin is under overdraft conditions, and groundwater elevation has declined some 70 feet in the eastern part of the Basin from 1960 to 2006 (TGBA 2008).

The following Groundwater Protection Measures are identified by the Plan:

a. Mitigate overdraft conditions; and,

b. Replenish groundwater extracted.

Basin Management Objectives are identified to maintain groundwater levels and protect groundwater resources. To maintain groundwater levels the following goals are set:

a. Encourage conjunctive use of groundwater and surface water by converting municipal water supply to surface water from groundwater, continue the use of flood irrigation to maintain groundwater recharge, and through active groundwater recharge,
b. Study effects of future land use on groundwater storage, and
c. Evaluate groundwater recharge projects.

Groundwater protection measures to mitigate overdraft conditions are proposed through the following actions:

a. Support replacing groundwater with surface water sources,
b. Conservation programs to reduce reliance on groundwater pumping,
c. Continue and enhance monitoring of groundwater and groundwater use,
d. Support agricultural agencies to provide irrigators with surface water in place of groundwater, and
e. Seek funding for projects that would identify and mitigate potential overdraft in the basin.

IMPACT OF DROUGHT CONDITIONS

Average annual rainfall measured from July to June for the Merced Groundwater Basin is 12.25 inches, based on over 100 years of meteorological data collection. Rainfall in the other groundwater basins east of the San Joaquin River would be similar; west of the River, it would be less (Nolte 2012). In general, periods of less-than-average rainfall are referred to as "drought" conditions, although the exact definition may vary depending on various factors. Periods of more-than-average rainfall are referred to as "wet" conditions.

Groundwater Supplies

Potential groundwater impacts related to drought conditions for the Merced Groundwater Basin can be assessed based on the Merced Groundwater Basin Groundwater Management Plan Update (MGBGMPU) (Nolte 2012). For information regarding policies and projects implemented by water purveyors within the Turlock and Merced Groundwater Basins to offset declines in groundwater supplies, see above.

From 1986-1987 to 1991-1992, annual groundwater storage within the Merced Groundwater Basin declined by up to 300,000 ac-ft in a single year. Cumulative decrease in groundwater storage over this period is nearly 1.0 million ac-ft. This period corresponds to the below average precipitation, and coincides with the implementation of various in-lieu and direct recharge programs by MID. From 1992-1993 to 2000-2001, annual change in groundwater storage increased, with the exception of 1999-2000. Annual increases during this period range from 200,000 ac-ft to less than 80,000 ac-ft. During the early 1990s, MID implemented in-lieu and direction recharge programs to address declining water levels within the Merced Groundwater Basin. During the period from 1992-1993 to 2000- 2001, cumulative groundwater storage increased approximately 700,000 ac-ft. From 2001-2002 to 2006-2007, groundwater storage decreased annually, with the exception of 2005-2006. Annual

decreases for this period range from 20,000 to 80,000 ac-ft, with a cumulative storage decrease of approximately 320,000 from 2001-2002 to 2006-2007.

Changes in groundwater storage display a good correlation with changes in precipitation patterns. In general, groundwater storage decreases were observed during periods of near or below average rainfall, while groundwater storage increased during times of above average rainfall. This correlation is well depicted, with decreased groundwater storage observed from 1986-1987 to 1991-1992 and 2001-2002 to 2006-2007, and increased groundwater storage observed from 1992-1993 to 2000-2001. As stated in MGBGMPU, the Merced Groundwater Basin is in a long-term and mild state of overdraft (Nolte 2012). Drought further exacerbates this condition and triggers the need for expanded recharge and conjunctive use programs.

Similarly, groundwater impacts related to drought conditions within the Turlock Groundwater Basin can be assessed based on information set forth in the Turlock Groundwater Basin Draft Groundwater Management Plan. According to the Plan, groundwater conditions within the Basin vary. Levels in the eastern areas have declined significantly since the 1960s by as much as 70 feet in some locations of intensive agriculture. Levels in the western areas of the Basin are high to the point of requiring pumping in certain areas to keep the groundwater from encroaching into the root zone of agricultural crops. As modeled, average inflows and outflows for the 1997-2006 period indicate that storage decreased by an average of 21,500 afy during that ten-year period. Increases in storage occurred in 1998, 2000, and 2001, but were offset by declines in storage in 1997, 1999, and 2002 through 2006. In any groundwater basin, groundwater storage will fluctuate both seasonally and annually, depending upon the water year classification, distribution of rainfall, and numerous other physical and biological factors. Alternating periods of decline and recovery in groundwater levels are a response to this natural variation. (TGBA 2008)

Little information regarding groundwater supply is available for the Delta-Mendota Groundwater Basin. Within that portion of the Chowchilla Groundwater Basin in Merced County, groundwater levels have declined an average of 40 feet from 1970 to 2000. However, the 2030 General Plan does not propose significant urban development within the Merced County portion of the Chowchilla Groundwater Basin, and planned urban uses west of the San Joaquin River within the county primarily rely upon surface water supplies as discussed below.

Surface Water Supplies

For all groundwater basins within the county, the availability of surface water supplies is directly impacted by drought. As examples, USBR and DWR cut back on surface water deliveries through the CVP and State Water Project in 2008 to agencies in Merced County, primarily those within the Delta-Mendota Groundwater Basin west of the San Joaquin River. However, similar cutbacks in surface supplies can affect water purveyors and users east of the San Joaquin River in the Chowchilla, Merced, and Turlock Groundwater Basins. As an example, as part of the water supply reductions, MID agricultural customers received only 2.5 ac-ft of water per acre, whereas the industry standard for almond orchards is 3.0 ac-ft of water per acre. All CVP contractors received 40 percent allocation (Nolte 2012). In response to the water crisis, farmers opted to fallow land, under-irrigate crops, and in some cases abandon land that was already planted. An estimated 2,947 acres of land were fallowed and 10,695 acres of land damaged in Merced County due to the water supply reductions (Nolte 2012).

In an on-going effort to deliver surface water during dry years and improve the availability of surface water supplies, USBR and DWR have formed a workgroup with major water users to: 1) explore opportunities and establish partnerships that could equitably maximize the use of water resources given current and future hydrologic conditions; and 2) identify strategies, tools, and agreements that could be implemented to improve operations and extend supplies. From this workgroup emerged the Central Valley Project Water Plan 2012. Building on the "Wet Year" of 2011, the following water management actions were recommended for implementation to better ensure deliveries of allocations:

- Operations for a full San Luis Reservoir
- Delta-Mendota Canal (DMC)/California Aqueduct Intertie Operations
- Joint Power of Diversion for Delta pumping facilities
- Exchange Contractor Transfers to allow alternate sources of water supply while more Delta water is delivered to farmers on the west side of the San Joaquin Valley
- State Water Project Source Shifting such as the Metropolitan Water District (MWD) using alternate water supplies depending on State Water Project allocations
- Level 2 Refuge Water Diversification including limited groundwater pumping to produce additional water annually.

QUALITATIVE COMPARISON OF AVAILABLE WATER SUPPLY VERSUS PROJECTED WATER DEMAND

Currently, agricultural irrigation represents the dominant water use in the county. Irrigation districts deliver water to hundreds of thousands of acres of farmland, orchards, and pasture. Sources of supply include groundwater and surface water from within the county, and water deliveries from Northern California transferred through the State Water Project and the federal Central Valley Project. Within the county, available water resources can be managed to meet local demands. However, reliance on external sources such as the State Water Project and CVP has proven problematic in view of restrictions in delivery caused by system shortages, drought, and competing demands.

For reference, long-term planning for CVP contractors assumes that districts will receive only 59 percent of their CVP allocation on a long-term average, and only 25-27 percent during a multi-year critical dry period (Nolte 2012). Reductions in external supply will necessitate either supplemental groundwater extraction from basins with limited capacity or reductions in agricultural operations. This "gap" in agricultural supplies in Western Merced County is the trigger for a number of conjunctive use projects designed to increase utilization of local water resources through storage and groundwater banking. The success of these projects will largely determine the ability of water purveyors to bridge the "gap" and maintain long-term, reliable service to current and future customers.

Urban water demands, in contrast to agricultural demands, constitute 5 to 15 percent of total water use depending on the location in the county. Future increases in urban water demands can likely be met through a carefully managed program of groundwater extraction and surface water deliveries as shown in Table 20-6. Further discussion is provided below.

Table 20-6 Incremental Increases in Urban Water Demands in Merced County

City/Community	Incremental Increase in Demands[a] (ac-ft)	Source of Water Supply
Eastern Merced County		
Atwater	12,836	Groundwater – Merced Basin
Livingston	11,426	Groundwater – Merced Basin
Merced	20,254	Groundwater – Merced Basin
Franklin-Beachwood	1,974	Groundwater – Merced Basin
Le Grand	691	Groundwater – Merced Basin
Planada	81	Groundwater – Merced Basin
Winton	1,040	Groundwater – Merced Basin
Celeste	116	Groundwater – Merced Basin, Individual Wells
Cressy	498	Groundwater – Merced Basin, Individual Wells
El Nido	147	Groundwater – Merced Basin, Individual Wells
Stevinson	165	Groundwater – Merced Basin, Individual Wells
Tuttle	128	Groundwater – Merced Basin, Individual Wells
Total Eastern Merced County – Cities	*44,515*	
Total Eastern Merced County - Unincorporated	*4,840*	
Total Eastern Merced County	*49,355*	
Western Merced County		
Dos Palos (includes Midway, North Dos Palos, South Dos Palos)	5,424	Surface Water – California Aqueduct
Gustine	2,855	Groundwater – Delta Mendota Basin
Los Banos	11,762	Groundwater – Delta Mendota Basin
Santa Nella	4,245	Surface Water-San Luis Water District (California Aqueduct) Groundwater - Delta Mendota Basin (for areas not permitted to use surface water)
Fox Hills	1,594	Surface Water-San Luis Water District (California Aqueduct)
Villages of Laguna San Luis	11,146	Surface Water-San Luis Water District (California Aqueduct)
Volta	707	Groundwater – Delta Mendota Basin
Dos Palos Y	365	Groundwater – Delta Mendota Basin
Total Western Merced County – Cities	*20,040*	
Total Western Merced County - Unincorporated	*18,060*	
Total Western Merced County	*38,100*	
Northern Merced County		
Delhi	1,610	Groundwater – Turlock Basin
Hilmar	1,058	Groundwater – Turlock Basin
Ballico	411	Groundwater – Turlock Basin
Snelling	731	Groundwater – Turlock Basin
Total Northern Merced County – Cities	*0*	
Total Northern Merced County - Unincorporated	*3,800*	
Total Northern Merced County	*3,800*	
Grand Total	92,000	

Notes: [a] Difference between Projected Water Demands and Existing Water Demands from Table 20-5.

Source: Nolte Associates, Inc., 2012.

Eastern Merced County

In eastern Merced County, the source of water supply for urban uses is groundwater obtained from the Merced Groundwater Basin as indicated in Table 20-6; no urban population is served by groundwater obtained from the Chowchilla Basin. Of the total incremental increase in urban demand in eastern Merced County (44,515 ac-ft), only 4,480 ac-ft would occur as a result of urban development within the unincorporated county; the remainder would be required to accommodate growth within the incorporated cities of Merced, Atwater, and Livingston.

While groundwater supplies are large in eastern Merced County, large urban demands are associated with population centers in Atwater and Merced. Increased groundwater pumping to support agricultural and urban activities has contributed to declining groundwater levels in the Merced Groundwater Basin, and localized instances of groundwater overdraft. Cones of depression are more pronounced in the Chowchilla, Livingston, and Merced areas, contributing to higher groundwater extraction costs and requiring more careful siting of municipal wells. Aggressive efforts have been initiated by MID, the primary water provider in eastern Merced County, to stabilize groundwater decline through conjunctive use programs and the conversion of agricultural supply from groundwater to surface water sources. Opportunities for direct recharge, such as in the Cressy area, are being explored to offset projected increases in municipal demand. Results of the MID efforts are encouraging, with increases in annual recharge of 60,000 afy, equivalent to 10 to 20 percent of MID annual deliveries.

Western Merced County

In western Merced County, the source of water supply for urban uses in unincorporated urban areas is primarily surface water delivered by the California Aqueduct. Of the total incremental increase in urban demand in western Merced County (38,100 ac-ft), 18,060 ac-ft would occur as a result of urban development within the unincorporated county; the remainder would be required to accommodate growth within the incorporated cities of Los Banos, Gustine, and Dos Palos.

In western Merced County, increased reliance on surface water supplies is a key element in a long-term water supply strategy. Because groundwater use in the Delta-Mendota Groundwater Basin is often constrained by capacity and water quality issues, surface water is the preferred source. Conversion of federal agricultural water contracts to municipal/industrial urban contracts, however, must consider "place of use" limits, and are subject to strict environmental scrutiny. Urban water demands in this area of the county, particularly for new towns, have the potential to significantly increase depending on the rate of development, and would represent a large fraction of both new and total water use in this area. Greater competition in the future for surface water supplies would in turn increase the need for improved efficiencies in water use, groundwater banking such as the Los Banos Creek Conjunctive Use Project, more aggressive implementation of conservation practices, and large-scale deliveries of recycled water for urban reuse. Reliance on surface water supplies should be tempered, however, by the recognition that long-term reliability is dependent upon future agreements between multiple stakeholders and interest groups.

Northern Merced County

In northern Merced County, the source of water supply for urban uses is groundwater obtained from the Turlock Groundwater Basin as indicated in Table 20-6. Of the total incremental increase in urban demand in northern Merced County (3,800 ac-ft), all would occur as a result of urban development within the unincorporated county.

Within the Turlock Groundwater Basin in northern Merced County, the estimated reduction in storage between 2002 and 2006 suggests that the basin may no longer be in the equilibrium state that existed in the 1990s. Increases in land use types that rely on groundwater for supply, especially the increase in irrigated agriculture in the eastern portion of the basin, have increased the net discharge from the basin. Slight decreases in unrealized storage are likely to continue if urban or irrigated land uses are developed in areas dependent upon groundwater. (TGBA 2008) Levels in the western areas of the Basin (within the vicinity of Hilmar) are high to the point of requiring pumping in certain areas to keep the groundwater from encroaching into the root zone of agricultural crops.

Deep percolation of irrigation water is the largest inflow to the groundwater basin and plays an important role in maintaining groundwater storage. Surface water from the Turlock Irrigation District, and to a lesser extent, the Merced Irrigation District, is used to supply more than half of the total irrigation water applied within the Basin. Hence, under current conditions the continued use of surface water for agricultural irrigation is vital for sustaining recharge in the basin. Future changes to inflows or outflows resulting from shifts in land use patterns have the potential to reduce recharge and create reductions in groundwater storage. (TGBA 2008)

Within Merced County, the only substantial urbanization that has occurred within the basin is within the communities of Hilmar and Delhi. Elsewhere in the Merced County portion of the basin, there are few existing or planned urban uses. However, in the territory of both the Eastside Water District and the Ballico-Cortez Water District there has been a shift in land use from non- irrigated lands to irrigated agriculture. The majority of the agricultural development occurred between 1952 and 1984. Irrigated agriculture within the Eastside and Ballico-Cortez water districts is dependent upon groundwater for their water supply. Unless additional land use changes occur within these areas, the main changes in water needs will likely come from improvements in water use efficiency practices or changing cropping patterns. Both the Turlock Irrigation District and the Eastside Water District are conducting studies and pilot projects to evaluate the potential for groundwater recharge basins on the east side of the Turlock Irrigation District irrigation service area to help stabilize groundwater levels in the area. (TGBA 2008)

WATER CONSERVATION REQUIREMENTS AND CHANGES IN URBAN DEMAND

With the adoption of Part 11 of the California Code of Regulation (CCR) Title 24 in January 2011, the State of California has adopted the nation's first "green" building code, commonly known as "CalGreen." The intent of CalGreen is to reduce water consumption by requiring future developments to implement water conservation measures.

When addressing residential water use, CalGreen 2010 requires a 20 percent reduction in indoor water use from the 2008 Title 24 baseline, through either prescriptive or performance methods. The prescriptive method requires installation of ultra-low flow fixtures for showerheads, bathroom and kitchen faucets, and toilets. The performance method requires a demonstrated 20 percent reduction in baseline water use, with options for compliance left to the builder. Historical water usage for fixtures and clothes washers is presented in Table 20-7.

Table 20-7 Historical Water Usage for Fixtures and Appliances

Fixture/Appliance[a]	Year				
	1975	1980	1992	2008	2011[c]
Shower (gpm)	3.5	2.5	2.5	2.5	2.0
Toilets (gpf[b])	5.0	3.6	1.6	1.6	1.28
Faucets (gpm)	2.5	2.5	2.5	2.2	1.8
Clothes washers (gal/cf)[d]	15.0	15.0	15.0	8.5	6.0[e]

[a] *Water Use in the California Residential Home*, January 2010.
[b] gpf = gallons per flush.
[c] CalGreen 2010 fixture rates for prescriptive method of compliance, effective January 2011.
[d] gal/cf = gallons per cubic foot.
[e] Regulated by CCR Title 20, Div 2, Ch 4, Article 4, Section 1605.3.
Source: Nolte Associates, Inc., 2012.

Other legislation and water conservation programs include the 20x2020 Water Conservation Plan (SB 7; Water Code Sections 10608 et seq. and 10800 et seq.), Leadership in Energy and Environmental Design (LEED), SB 407 (Civil Code Section 1101.1 et seq., 1102.155), and the EPA WaterSense® Program, each of which have similar goals in water use reduction and efficiency to CalGreen.

The 20x2020 Water Conservation Plan requires a statewide 20 percent per capita reduction in urban water demands by 2020 while LEED has a prerequisite to reduce indoor water usage 20 percent beyond 1992 standards. SB 407 mandates retrofit of non-compliant plumbing fixtures in pre-1994 homes. Beginning in January 2014, all building alterations or improvements to single-family, multi-family, and commercial properties will require non-compliant fixtures to be replaced for final permit approval by local building departments. Starting in January 2017, a seller or transferor of a property must disclose to the purchaser the requirement for replacing plumbing fixtures. Furthermore, beginning in January 2019, all non-compliant plumbing fixtures in multi-family and commercial properties must be replaced. The EPA WaterSense® program also requires a 20 percent reduction in water use. New homes may be labeled as EPA WaterSense® if specific criteria are met and the home is built by a WaterSense® building partner.

With the new CalGreen legislation and other water conservation programs, indoor water use is expected to decrease significantly for new residential development. Reduced indoor water use resulting from new water conservation legislation and programs is provided in Table 20-8.

Table 20-8 Water Use Considering New Water Conservation Legislation Programs

Legislation/Program	Expected Indoor Water Use, gpcd
EPA WaterSense® Program	39.5[b]
AWWA	43.5[c]

[a] *Water Use in the California Residential Home*, January 2010 [43].

[b] *Water-Efficient Single Family New Home Specification*, May 2008 [44].

[c] *Water Conservation Measurement Metrics Guidance Report,* January 2010 [44].

Source: Nolte Associates, Inc., 2012.

To put the data presented in Table 20-8 into perspective, unit urban water demands should be considered. Considering historical water usage for Los Banos and Livingston as examples, per capita demand rates range from 123-150 gpd. Typically, indoor water use (consumptive) represents up to two-thirds of total water demand. If the expectations for reduced indoor water usage were achieved (as shown in Table 20-8), overall future urban demand could decrease 15-30 percent.

Reduction in Demands Resulting from Wastewater Reclamation

The largest increases in urban water demands are projected for Eastern Merced County, in communities where water reclamation is currently practiced. To realize the full benefits of reduced non-potable water demands, tertiary-disinfected reclaimed water is necessary for unrestricted urban landscape irrigation. Upgrades at wastewater treatment plants have recently occurred for the cities of Atwater and Merced, setting the stage for construction of a new water distribution network to deliver reclaimed water to new development. Should a non-potable water system be implemented, non-potable water demands could be reduced up to 25 percent with the substitution of reclaimed water for irrigation of common areas, residential front yards, public parks, landscape medians, and institutional facilities. Depending on the extent of implementation, use of reclaimed water could contribute to a five to 10 percent decrease in overall urban water demands.

Environmental Effects of Managing Groundwater Levels and Obtaining New Surface Supplies

Needed water infrastructure may include groundwater wells, raw water storage reservoirs, storage tanks, pump stations, conveyance piping, or treatment facilities, percolation basins, and canals, both within Merced County and in areas outside the county but tributary to state and federal water project facilities. Construction of new and/or expanded groundwater management systems surface supply facilities could result in potential short-term noise, air quality, biological resource, cultural resource, traffic, and water quality impacts from construction activities, including excavation, stockpiling, hauling, and pipe flushing. Long-term impacts could include the loss or degradation of agricultural, biological, and cultural resources, use of hazardous substances for water treatment, adverse water quality effects in receiving surface water and groundwater, and increased use of surface water and groundwater supplies. The range of potential effects is detailed in Table 20-9.

Table 20-9 Possible Impacts of Constructing and Operating Groundwater Management Facilities and Surface Water Supplies

Types of Potentially Affected Environmental Resources	Possible Impacts
Aesthetics/Visual Resources	The addition of new project facilities could affect the visual environment. New pipelines, pumping stations, or transmission lines near or in residential areas or highly visible areas could cause negative impacts.
Agriculture	Some irrigated land or grazing land could be taken out of production where storage, conveyance, or recharge facilities could be located.
Air Quality and Odors	Air emissions from construction equipment and traffic could occur during the construction phase of new projects.
Biological Resources (Fisheries), including Special Status Species	Change in the amount and quality of fishery habitat in affected streams, rivers, and reservoir/lake from increased diversions of surface waters, and potential fish entrainment at possible diversion sites in lakes and streams.
Biological Resources (Wetlands and Riparian Habitat)	Changes in the amount or functions and values of various types of wetlands from the construction of new facilities, or in riparian areas from changes in the operations of reservoirs/lakes or stream flows. Riparian habitat could be affected by hydrology changes or new construction.
Biological Resources (Botanical), including Special Status Species	Disturbance to rare plants and their habitat and other types of vegetation from construction activities or changes in hydrology along streams and rivers, and at reservoirs/lakes.
Biological Resources (Wildlife), including Special Status Species	Changes in the amount and quality of wildlife habitat near affected reservoirs/lakes, rivers and streams and where storage, conveyance, or recharge facilities would be located.
Cultural Resources	Historic, prehistoric, and ethnographic resources could be affected by the construction and operation of new facilities.
Geology and Soils	Increase in erosion and sedimentation from construction activities; change in sediment transport in streams and rivers; geologic hazards could cause problems for new facilities if not sited carefully.
Mineral Resources	New project facilities could interfere with the extraction of minerals at known or yet-to-be discovered mineral sites.
Hazards and Hazardous Materials	Construction of new facilities would involve the use of hazardous materials.
Surface Water Hydrology	Changes in the magnitude and timing of flows in affected streams and other water bodies.
Groundwater	Adverse and/or beneficial changes in levels of groundwater within the various subbasins in the county.
Water Quality	Changes in stream, river, or reservoir/lake temperature, dissolved oxygen, turbidity, total suspended solids and other water quality parameters of concern during construction and operation of new facilities.
Compatibility with Existing Land Uses and Other Policies and Plans	Some new project facilities may not be compatible with surrounding land uses, or may be inconsistent with related federal, state, and local plans and policies.
Noise	Loud noises from construction equipment and traffic could occur during the construction phase of new projects. New pumping stations could cause adverse noise impacts for nearby residents and recreationists.
Recreation	Changes in the quantity or quality of recreation opportunities in affected streams, rivers, and reservoirs/lakes; some impacts could also occur during construction and operation of new storage, conveyance, or recharge facilities.
Transportation	Local roads would experience traffic increases during construction of new facilities.

Table 20-9 Possible Impacts of Constructing and Operating Groundwater Management Facilities and Surface Water Supplies	
Types of Potentially Affected Environmental Resources	**Possible Impacts**
Utilities and Service Systems	The routing and siting of new facilities could interfere with the operation or maintenance of existing or planned public utilities, including communication and energy infrastructure.

Source: Adapted from County of Napa, Napa County General Plan Update Draft Environmental Impact Report, 2007.

Although the 2030 General Plan would result in future development leading to increased demands for groundwater management and potential surface water supply facilities, the exact amount, location, and type of infrastructure needed cannot be known at this time. Further, future facility construction plans would be evaluated on a case-by-case basis, and undergo project-level environmental review, which would ensure additional compliance with specific federal, state, and local regulations designed to avoid or reduce environmental effects.

PROPOSED 2030 GENERAL PLAN GOALS AND POLICIES

Adequate water supply and entitlements are valid concerns for the County given that many water purveyors are operating at or near capacity under existing entitlements, all four groundwater basins have exhibited patterns of decline or overdraft, and there is increased competition by urban, agricultural, and habitat needs for federal and state supplied surface water sources. The 2030 General Plan includes goals and policies created to ensure a reliable water supply sufficient to meet the existing and future demands of the county. Table 20-10 includes goals and policies from the 2030 General Plan that communicate the County's intention to monitor the water supply needs of the urban and agricultural communities, and encourage measures to promote the conservation and management of existing supplies.

Table 20-10 Merced County 2030 General Plan Goals and Policies Relating to Preservation of an Adequate Water Supply		
Goal or Policy	**Goal or Policy Text**	**How the Goal or Policy Avoids or Reduces Impact**
Land Use Element		
Policy LU-5.A.2: Public Sewer and Water	Require all development within Urban Communities to be connected to public sewer and water systems where such systems exist.	Ensures that adequate water supply and treatment is available prior to the approval of all development within designated urban communities.
Policy LU-5.D.6: Sewer and Water Services Requirement	Require sewer and water services for new commercial development in accordance with the local urban service district standards and the Building Code.	Ensures that adequate water supply and treatment is available prior to the approval of commercial development within designated urban communities.
Policy LU-5.F.3: Infrastructure Guarantees	Require project applicants for new Urban Communities to study and guarantee, through a development agreement, that water, wastewater, and other infrastructure needs can be provided as part of the approval of any new Urban Community.	Ensures that adequate water supply and treatment is available prior to the approval of development within new Urban Communities.

Table 20-10 Merced County 2030 General Plan Goals and Policies Relating to Preservation of an Adequate Water Supply

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Policy LU-5.F.4: Water Impacts	Prohibit new Urban Communities if they will negatively impact the water supply of existing users.	Ensures that water demands from New Towns would not adversely affect existing users.
Policy LU-6.6: Public Service Availability	Do not designate any new Highway Interchange Centers unless it can be demonstrated that sufficient public services are available.	Ensures that adequate water supply and treatment is available prior to the approval of new Highway Interchange Centers.
Public Facilities and Services Element		
Policy PFS-1.5: Public Facility Master Plans	Require regular updates of County Facility Master Plans to: a. Ensure that future public facilities are designed to meet projected long-term capacity needs in order to avoid unplanned expansion costs; b. Support and pioneer infrastructure master plans and facilities that further sustainable practices, including the following: pursue water reuse (i.e., greywater), encourage joint drainage and park facilities, and change drainage standards to allow for joint use; c. Coordinate with local service districts to ensure that sufficient water/wastewater treatment is available for unincorporated communities prior to directing additional growth to them; e. Consider establishment of a County water and wastewater system to serve unincorporated community development projects.	Requires the County to coordinate with service providers to ensure that water conservation measures are implemented and that plans are in place for water treatment and distribution facilities needed to serve existing and future development.
Policy PFS-1.7: Infrastructure Investment Prioritization	Require infrastructure investments to be prioritized based on the following characteristics: a. Communities with the greatest need based on future growth or deficiencies in existing services; and/or b. Communities with the greatest economic potential.	Prioritizes water treatment and distribution investments to those communities most in need.
Policy PFS-2.9: Wastewater Treatment Plant Upgrading	Encourage, where appropriate, upgrades to existing centralized or regional wastewater treatment plants to produce reclaimed water suitable for unrestricted use.	Encourages the County to support better use of treated wastewater to help offset potable water demands.

Table 20-10 Merced County 2030 General Plan Goals and Policies Relating to Preservation of an Adequate Water Supply

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Water Element		
Goal W-1	Ensure a reliable water supply sufficient to meet the existing and future needs of the County.	States the overall goal for the County to make sure there is an adequate supply of water to meet the County's needs now and into the future.
Policy W-1.1: Countywide Water Supply	Support water districts and agencies in groundwater management, water supply planning and increased water use efficiency. Require any new development to demonstrate long-term water supply.	Moves towards integrating various districts' efforts in managing surface and groundwater supplies and use via Countywide support and prevents individual developments from impacting existing water users by requiring that a long-term water supply be made evident.
Policy W-1.2: Demonstrating Sufficient Water Supply for New Development	Issue building permit for new development only after it's been demonstrated that an adequate quantity and quality of water will be available in the adopted service area.	Provides the County with a tool to halt further development in a specific area until it can be demonstrated there is adequate water supply for both existing uses and the proposed development in the service area.
Policy W-1.3: Agricultural Water Study	Maintain a detailed and periodically updated General Plan study of water use and needs for agriculture countywide in cooperation with local water agencies and districts.	Along with Policy W-1.1 it provides an opportunity to assess irrigation water use countywide rather than by each community or irrigation district dependent upon their location, which in turn allows for improved assessment of overall water supply conditions and better coordination of actions needed to continue to promote and preserve an adequate water supply for the agricultural community of the county as a whole.
Policy W-1.4: Groundwater Recharge Projects	Support implementation of groundwater recharge projects consistent with the adopted Integrated Regional Water Management Plans to minimize groundwater overdraft and ensure long-term availability.	Allows for the County to take a proactive approach to supporting groundwater recharge efforts in order to help assure long-term groundwater supply availability.
Policy W-1.6: Surface Water Storage	Support water agencies in the exploration of additional surface water storage opportunities.	Encourages County support and potential motivation to water agencies to explore additional surface water storage opportunities to increase surface water supplies.
Policy W-1.7: Water Sufficiency Requirement	Require new developments to provide a source water sufficiency study and water supply assessment per Title 22 and SB 610, consistent with IRWMP and to include the potential effects on existing users with public input.	Gives the County and the affected public the opportunity to understand to what degree and from what sources the water will be used and supplied from to support a new development and what the potential impacts may be.

Table 20-10 Merced County 2030 General Plan Goals and Policies Relating to Preservation of an Adequate Water Supply

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Policy W-1.10: Groundwater Overdraft Protection	Encourage large water consumers to use available surface water irrigation (secondary water) for irrigation of school athletic fields, sports complexes and large landscaped areas.	Provides an opportunity to conserve potable water use and lessen the impact on water supplies by encouraging large users to substitute secondary water for certain irrigation practices where there would be no risk to public health.
Goal W-3	Maximize the efficient use and reuse of water supplies through water conservation, water recycling, and public education.	States County's support for water conservation generally to maximize use of the county's finite water resources.
Policy W-3.1: Water Availability and Conservation	Support efforts of water agencies and districts to prevent the depletion of groundwater resources and promote the conservation and reuse of water.	States County's explicit support for this type of water conservation.
Policy W-3.2: Landscape Water Efficiency	Ensure the conservation of water in urban areas through the implementation of the State Model Water Efficient Landscape Ordinance as implemented in Section 18.38 (Landscaping Standards) of the County Zoning Ordinance.	States County's explicit support for this type of water conservation.
Policy W-3.3: Water System Rehabilitation	Encourage the rehabilitation of irrigation systems and other water delivery systems to reduce lost water and increase the efficient use and availability of water.	States County's explicit support for this type of water conservation.
Policy W-3.4: High Water Use Processing Activities	Prohibit any processing activities with high water use practices near areas where groundwater overdraft problems exist, unless the facility uses water recycling and conservation techniques that minimize affects of water use to the groundwater table.	States County's explicit support for this type of water conservation.
Policy W-3.5: Educational Programs	Support the development of educational programs by water districts and public agencies, including the Model Water Efficient Landscape Standards adopted by the State Department of Water Resources, to increase public awareness of efficiently conserving, using, reusing, and managing water resources.	States County's explicit support for this type of water conservation.
Policy W-3.6: New Construction	Promote efficient water conveyance systems in new construction, including systems for the recycling of greywater.	States County's explicit support for this type of water conservation.
Policy W-3.7: Existing Development Retrofits	Encourage the retrofitting of existing development with water-conserving devices.	States County's explicit support for this type of water conservation.

Table 20-10 Merced County 2030 General Plan Goals and Policies Relating to Preservation of an Adequate Water Supply

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Policy W-3.8: Water Reuse Programs	Encourage water reuse programs to conserve raw or potable water supplies (such as the capture of rainwater) consistent with State Department of Public Health guidelines.	States County's explicit support for this type of water conservation.
Policy W-3.9: Water Reuse Treatment	Encourage water reuse/recycling through the treatment and distribution of tertiary treated wastewater.	States County's explicit support for this type of water conservation.
Policy W-3.10: Domestic Greywater Use	Encourage the use of domestic grey water for landscape irrigation purposes.	States County's explicit support for this type of water conservation.
Policy W-3.11: Composting Toilets	Explore the feasibility of reducing wastewater through the use of dry/composting toilets in new construction.	States County's explicit support for this type of water conservation.
Policy W-3.12: Water Conservation Information	Provide information on water conservation measures to the general public and coordinate with conservation efforts of the University of California, Cooperative Extension, local Resource Conservation Districts, the Natural Resource Conservation Service, and irrigation districts.	States County's explicit support for this type of water conservation.
Policy W-3.13: Agricultural Water Reuse	Promote and facilitate using reclaimed wastewater for agricultural irrigation, in accordance with Title 22 and guidelines published by the State Department of Public Health.	States County's explicit support for this type of water conservation.
Policy W-3.14: Agricultural Water Conservation	Encourage farmers to use irrigation methods which conserve water in areas where flood irrigation is used for groundwater recharge.	States County's explicit support for this type of water conservation.
Policy W-3.15: Agricultural Water Efficiency	Coordinate with the Farm Bureau and agricultural irrigation districts to promote protection of water resources in agricultural areas by encouraging programs that assist producers to use water efficiently in agricultural operations and by promoting technology for efficient water use in agriculture.	States County's explicit support for this type of water conservation.
Goal W-5	Promote interagency communication and cooperation between local governments, irrigation districts, and water districts in order to optimize use of resources and provide the highest level of dependable and affordable service, while respecting individual entities water rights and interests.	Obligates the County to coordinate with service providers to ensure that finites water supplies are used wisely, that water conservation measures are implemented and that plans are in place for water treatment and distribution facilities needed to serve existing and future development.

Table 20-10 Merced County 2030 General Plan Goals and Policies Relating to Preservation of an Adequate Water Supply

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Policy W-5.1: Countywide Water Supply Study	Prepare and regularly update a comprehensive water supply study that includes all four groundwater basins and three hydrologic zones, and takes into consideration activities in neighboring counties and the region. The plan shall consider reductions in Federal and State water deliveries in the western part of the County and anticipated reductions in water supplies due to climate change.	Obligates the County to coordinate with service providers to ensure that finite water supplies are used wisely and that water conservation are implemented.
Policy W-5.2: Master Plan Development	Coordinate with all agricultural and urban water districts to develop water supply master plans to guide future groundwater basin water supplies through regional solutions.	Obligates the County to coordinate with service providers to ensure that finites water supplies are used wisely, that water conservation measures are implemented, and that plans are in place for water treatment and distribution facilities needed to serve existing and future development.
Policy W-5.3: Water Forum	Support a County-wide water forum to coordinate long-term water demand and supply programs that emphasize sustainability in the County.	Obligates the County to coordinate with service providers to ensure that finite water supplies are used wisely and that water conservation are implemented.

Source: Merced County, 2011; Planning Partners, 2012.

As set forth in Table 20-10, the 2030 General Plan contains many policies to manage finite water resources within the county. These policies may be divided into several broad categories as indicated in Table 20-11.

Table 20-11 Categories of Water Policies Set Forth in the 2030 General Plan

Policy Category	Goal and Policy Implementing Category
Proof of sufficient water supply and adequacy of water treatment and delivery infrastructure prior to discretionary approval	LU-5.A.2, LU-5.D.6, LU-5.F.3, LU-6.6, W-1.2, W-1.7
Water demand from new towns shall not affect existing users	LU-5.F.4
Plan/Coordinate/Cooperate with irrigation districts, urban water providers, the agricultural community, and other users to manage water use within the county	PFS-1.5, PFS-1.7, W-1, W-1.1, W1.3, W-3.1, W-3.15, W-5.1, W-5.2, W-5.3
Conserve/Recycle/Reuse finite water supplies within the county	PFS-2.9, W-1.4, W-1.10, W-3, W-3.2 through W-3.14
Increase water supplies	W.1-6

Source: Planning Partners, 2012.

As indicated in Table 20-11, the primary policy direction of the 2030 General Plan is to recognize that existing water supplies available to the county are finite, with little possibility of increasing supplies. Therefore, existing supplies need to be well managed and efficiently used. Only Policy

W.1-6 contemplates an increase in supply, and it would function only by supporting other entities in their actions.

Future land uses that rely on groundwater for supply will continue to increase the net discharges from the groundwater subbasins. For the basins with groundwater storage decline, specifically the Merced and Turlock Groundwater Basins, additional decreases in unrealized storage are likely to continue unless mitigated through conjunctive use programs, groundwater banking, and recharge. Further studies, as identified in General Plan policies, would be pursued for augmenting groundwater supply with alternative water sources such as water conservation, water banking, and development of reclaimed wastewater for urban reuse. Groundwater conservation practices would continue to be encouraged, as well as groundwater recharge projects and studies.

Water purveyors within the Turlock and Merced Groundwater Basins have developed management plans that seek to stabilize and reverse declines in groundwater levels within the respective basins through conjunctive use, agricultural water efficiency improvements, and recharge. Similarly, state legislation requires increasing urban water use efficiency for both existing and future development.

Effective implementation of groundwater management practices are necessary to meet future water demands via groundwater extraction, without creating or worsening declining groundwater levels, and adversely affecting existing wells. Interpreting the long-term success of groundwater management efforts within Merced County and elsewhere cannot be achieved at the present time. While there are many examples of local agency successes, there are neither mandates to prepare groundwater management plans nor reporting requirements when plans are implemented, so a comprehensive assessment of local planning efforts is not possible. Additionally, many plans have been adopted only recently, so many of the plan components are either untested or not implemented. At a minimum, successful groundwater management should be defined as maintaining and maximizing long-term reliability of the groundwater resource, focused on preventing significant depletion of groundwater in storage over the long term, and preventing significant degradation of groundwater quality.

Although the 2030 General Plan identifies a number of actions to be taken by the County and different entities within the county, many of the actions necessary to successfully manage water resources and use in the county are beyond the control of Merced County government, especially water use within the agricultural sector. Due to the uncertainty of future water management efforts to be conducted by these many different entities, insufficient future surface water and groundwater supplies may be experienced in portions of the county. Consequently, even with implementation of the policies identified in Tables 20-10 and 20-11, this impact would be potentially significant.

Significance of Impact: Potentially significant.

Mitigation Measure USS-1a:

Amend Policy LU-5.F.4: Water Impacts, as follows:

> Prohibit new Urban Communities<u>, or the expansion of existing urban communities,</u> if they will negatively impact the water supply of existing users.

Mitigation Measure USS-1b:

Amend Policy W-3.7: Existing Development Retrofits, as follows:

> ~~Encourage~~ Enforce the retrofitting of existing development with water-conserving devices as required by state law.

Mitigation Measure USS-1c:

Amend Policy W-5.3: Water Forum, as follows:

> Support a county-wide water forum to coordinate long-term water demand and supply programs that emphasize sustainability in the County consistent with approved IRWMPs.

Environmental Effects of Measures: Because these mitigation measures would result in increased water conservation and potentially lead to reductions in future demand for such resources arising from the development of urban uses and infrastructure identified in the 2030 General Plan, there would be no additional impacts beyond those identified for such development in Chapters 5 through 22 of this Draft PEIR.

Level of Significance After Mitigation: Significant and unavoidable.

Water Purveyors east of the San Joaquin River have initiated a series of projects and programs to maintain and restore groundwater resources. Similarly, the state has implemented requirements for increased water use efficiency for both existing and planned, future development. Proposed policies in the 2030 General Plan support and implement these initiatives. The 2030 General Plan additionally contains policies that could result in increased water use efficiencies for both agricultural and urban users, and that require new urban development to demonstrate that sufficient water supplies are available without injury to existing users. No additional technologically or economically feasible mitigation measures beyond supporting water purveyor and state programs to conserve water, and the implementation of policies contained within the 2030 General Plan are currently available to reduce this impact to a less-than-significant level.

Impact USS-2: Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Implementation of the proposed 2030 General Plan would lead to demands for increased potable water and wastewater treatment services from future urban development. The majority of existing water and wastewater facilities in the county meet current demand, but would be unable to service future growth without expanding or building new water and wastewater treatment and distribution, collection, and disposal facilities. Because 2030 General Plan policies require that new development be served by adequate water and wastewater facilities without adverse effects to existing customers, and the programmatic environmental effects of constructing and operating such uses are set forth in Chapters 5 through 22 of this Draft PEIR, this would be a less-than-significant impact.

Needed water infrastructure may include groundwater wells, raw water storage reservoirs, storage tanks, pump stations, conveyance piping, or treatment facilities. Necessary wastewater facilities could

include collection piping, treatment and disposal facilities. Construction of new and expanded water and wastewater treatment, collection and distribution systems could result in potential short-term noise, air quality, biological resource, cultural resource, traffic, and water quality impacts from construction activities, including excavation, stockpiling, hauling, and pipe flushing. Long-term impacts could include the loss or degradation of agricultural, biological, and cultural resources, use of hazardous substances for water and wastewater treatment, adverse water quality effects in receiving surface water and groundwater, and increased use of surface water and groundwater supplies. The range of potential effects is detailed in Table 20-12.

Table 20-12 Possible Impacts of Constructing and Operating Water Treatment / Distribution and Wastewater Collection / Treatment / Disposal Projects

Types of Potentially Affected Environmental Resources	Possible Impacts
Aesthetics/Visual Resources	The addition of new project facilities could affect the visual environment. New pipelines, pumping stations, or transmission lines near or in residential areas or highly visible areas could cause negative impacts.
Agriculture	Some irrigated land or grazing land could be taken out of production where collection, treatment, and distribution facilities could be located.
Air Quality and Odors	Air emissions from construction equipment and traffic could occur during the construction phase of new projects. New wastewater collection, treatment, and disposal facilities could cause adverse odor impacts for nearby residents and recreationists.
Biological Resources (Fisheries), including Special Status Species	Change in the amount and quality of fishery habitat in affected streams and rivers from increased diversions of surface waters or discharges of treated wastewater.
Biological Resources (Wetlands and Riparian Habitat)	Changes in the amount or functions and values of various types of wetlands from the construction of new facilities, or in riparian areas from changes in stream flows. Riparian habitat could be affected by hydrology changes or new construction.
Biological Resources (Botanical), including Special Status Species	Disturbance to rare plants and their habitat and other types of vegetation from construction activities or changes in hydrology along streams and rivers.
Biological Resources (Wildlife), including Special Status Species	Changes in the amount and quality of wildlife habitat near affected streams and where collection, treatment, and distribution facilities would be located.
Cultural Resources	Historic, prehistoric, and ethnographic resources could be affected by the construction and operation of new facilities
Geology and Soils	Increase in erosion and sedimentation from construction activities; change in sediment transport in streams; geologic hazards could cause problems for new facilities if not sited carefully.
Mineral Resources	New project facilities could interfere with the extraction of minerals at known or yet-to-be discovered mineral sites.
Hazards and Hazardous Materials	Construction of new facilities would involve the use of hazardous materials. Both water and wastewater treatment plants use hazardous materials in their respective treatment processes
Surface Water Hydrology	Changes in the magnitude and timing of flows in affected streams and other water bodies.
Groundwater	Adverse and/or beneficial changes in levels and quality of groundwater within the various subbasins in the county.
Water Quality	Changes in grouwndwater and surface water quality, including stream temperature, dissolved oxygen, turbidity, total suspended solids and other water quality parameters of concern during construction and operation of new facilities.

Table 20-12 Possible Impacts of Constructing and Operating Water Treatment / Distribution and Wastewater Collection / Treatment / Disposal Projects

Types of Potentially Affected Environmental Resources	Possible Impacts
Compatibility with Existing Land Uses and Other Policies and Plans	Some new project facilities may not be compatible with surrounding land uses, or may be inconsistent with related federal, State, and local plans and policies.
Noise	Loud noises from construction equipment and traffic could occur during the construction phase of new projects. New pumping stations could cause adverse noise impacts for nearby residents and recreationists.
Recreation	Changes in the quantity or quality of recreation opportunities in affected streams; some impacts could also occur during construction and operation of new conveyance, treatment, storage, and distribution facilities.
Transportation	Local roads would experience traffic increases during construction of new facilities.
Utilities and Service Systems	The routing and siting of new facilities could interfere with the operation or maintenance of existing or planned public utilities, including communication and energy infrastructure.

Source: Adapted from County of Napa, Napa County General Plan Update Draft Environmental Impact Report, 2007.

Table 20-13 sets forth 2030 General Plan policies regarding the need to improve water and wastewater treatment, collection, delivery, and disposal infrastructure in the county.

Table 20-13 Merced County 2030 General Plan Goals and Policies Relating to Water Treatment and Distribution

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Land Use Element		
Policy LU-5.A.2: Public Sewer and Water	Require all development within Urban Communities to be connected to public sewer and water systems where such systems exist.	Ensures that adequate water and wastewater treatment, distribution, and/or transmission facilities are available prior to the approval of all development within designated urban communities.
Policy LU-5.D.6: Sewer and Water Services Requirement	Require sewer and water services for new commercial development in accordance with the local urban service district standards and the Building Code.	Ensures that adequate water supply and treatment is available prior to the approval of commercial development within designated urban communities.
Policy LU-5.F.3: Infrastructure Guarantees	Require project applicants for new Urban Communities to study and guarantee, through a development agreement, that water, wastewater, and other infrastructure needs can be provided as part of the approval of any new Urban Community.	Ensures that adequate water supply and treatment is available prior to the approval of new urban communities.
Public Facilities and Services Element		
Policy PFS-1.5: Public Facility Master Plans	Require regular updates of County Facility Master Plans to: a. Ensure that future public facilities are designed to meet projected long-term capacity needs in order to avoid unplanned expansion costs; b. Support and pioneer infrastructure	Requires the County to coordinate with service providers and ensure that water conservation measures are implemented and that plans are in place for water treatment and distribution facilities needed to serve existing and future development.

Table 20-13 Merced County 2030 General Plan Goals and Policies Relating to Water Treatment and Distribution

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
	master plans and facilities that further sustainable practices, including the following: pursue water reuse (i.e., greywater), encourage joint drainage and park facilities, and change drainage standards to allow for joint use; c. Coordinate with local service districts to ensure that sufficient water/wastewater treatment is available for unincorporated communities prior to directing additional growth to them; e. Consider establishment of a County water and wastewater system to serve unincorporated community development projects.	

Source: Merced County, 2011; Planning Partners, 2012.

Although the 2030 General Plan would result in future development leading to increased demands for water and wastewater treatment, distribution, collection, and disposal infrastructure, the exact amount, location, and type of infrastructure needed cannot be known at this time. Further, future facility construction plans would be evaluated on a case-by-case basis, and undergo project-level environmental review, which would ensure additional compliance with specific federal, state, and local regulations designed to avoid or reduce environmental effects. The potential environmental effects of constructing and operating new and expanded utility infrastructure to support development identified in the 2030 General Plan within designated urban areas and from the development of scattered rural residential uses, agriculturally related industries, and surface mines are evaluated in Chapters 5 through 22 of this Draft PEIR. There would be no additional programmatic impacts beyond those identified for unincorporated area development in general. This impact would be less than significant, and there would be no need for additional program-level mitigation measures not identified elsewhere in this Draft PEIR.

Significance of Impact: Less than significant.

Mitigation Measure: None required.

Impact USS-3: Adequate wastewater treatment capacity, including that necessary to meet the wastewater treatment requirements of the RWQCB, to serve the projected demand without disrupting existing commitments as determined by the wastewater treatment provider, and new construction or facility expansion to serve future demand.

Implementation of the proposed 2030 General Plan would lead to increased demand to collect, treat, and dispose of wastewater from urban development. The majority of existing wastewater treatment facilities in the county meet current demand, but would be unable to service future growth without expanding or building new collection, treatment, or disposal facilities. Because 2030

General Plan policies require that new development be served by adequate wastewater treatment facilities without adverse effects to existing customers, and the programmatic environmental effects of constructing and operating such uses are set forth in Chapters 5 through 22 of this Draft PEIR, this would be a less-than-significant impact.

As shown in Table 20-14, a variety of special districts, community service districts, water districts and sanitary districts scattered throughout the county provide wastewater collection and treatment services for the communities in which they reside. There are also areas in the county that lack sewer infrastructure and rely instead on individual or community on-site wastewater treatment systems. Similar to water supply, existing wastewater treatment providers do not have enough available capacity to service future growth under the 2030 General Plan.

Table 20-14 Municipal Wastewater Service Providers Serving Unincorporated Merced County

	Average Treatment Flow (mgd[a])	Permitted Capacity (mgd)
Delhi County Water District	0.61	0.80
Franklin County Water District	0.4	0.6
Hilmar County Water District	0.15	0.35
Le Grand Community Services District	n/a[b]	n/a[b]
Midway Community Services District	n/a [b,e]	n/a[b,e]
Planada Community Services District	0.36	n/a[c]
Santa Nella County Water District	0.30	0.40
Snelling Community Services District	0.067	0.10
San Luis Water District (Fox Hills)	n/a[d]	0.0
South Dos Palos County Water District	n/a[e]	n/a[e]
Villages of Laguna San Luis (SLWD)	n/a[d]	0.0
Winton Water and Sanitary District	n/a[b]	n/a[b]

Notes:
[a] mgd = million gallons per day
[b] n/a = not available
[c] n/a = CVRWQCB requires that a new treatment plant be constructed
[d] Future demand at buildout of project
[e] Wastewater treatment provided under a Joint Powers Authority with the City of Dos Palos, South Dos Palso CSD, and Midway CSD

Source: Merced County, 2007; updated 2012.

In light of the shortfall of wastewater collection, treatment, and disposal capacity, the 2030 General Plan includes Water Element Goal W-2 and its policies to advocate for expansion of wastewater systems to accommodate continued urban growth through full buildout conditions. The goal and its policies are shown in Table 20-15.

Table 20-15 Merced County 2030 General Plan Goals and Policies Relating to Supporting Adequate Wastewater Capacity and Treatment

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Water Element		
Goal W-2	Ensure adequate wastewater collection, treatment, and disposal within the County.	States the overall goal for the County to make sure there are adequate wastewater systems in place to meet the County's needs now and into the future.
Policy PFS-2.1: Water and Sewer Expansion	Encourage public sewer system operators to maintain and expand their systems to meet the development needs of the County.	Moves the County towards more comprehensive planning and support of wastewater treatment systems countywide rather than leaving each district or system alone to tackle their site specific needs individually.
Policy PFS-2.2: Wastewater Treatment and Disposal Capacity	Require applicants for discretionary projects within special district boundaries to acquire a "Can and Will Serve" letter or similar documentation from the appropriate sewer and/or water district demonstrating the commitment of capacity prior to acceptance of the discretionary application.	Provides the County with a tool to ensure new development wastewater treatment needs are met and don't cause detriment to existing users.
Policy PFS–2.3: Sewer and Water District Requirement	Require permitted developments to provide proof of approved service from a local sewer and/or water district or approval from the County Health Department for onsite systems outside of districts' "service boundaries" prior to authorization of building permit.	Provides the County with an oversight opportunity to ensure new development wastewater treatment needs are able to be met and don't cause detriment to existing users.
Policy PFS–2.8: Grant Application Assistance	Support communities and special districts in applying for State and federal grants for major wastewater related expansions or upgrades when such plans promote the efficient solution to wastewater treatment needs for the County and are consistent with adopted County General Plan and Community Plans.	Provides an avenue for funding to support construction of expanded or new services to meet new development demands.

Source: Merced County, 2011; Planning Partners, 2012.

Increased urban growth under the 2030 General Plan could result in significant strain on existing wastewater treatment systems, and potentially impact existing users. Wastewater policies PFS-2.1 and Policy PFS-2.8 would help alleviate this by establishing a directive to support districts in implementing and acquiring funding for construction of expanded and new wastewater facilities. Even more essential to negating potential impacts are Policy PFS-2.2 and Policy PFS-2.3, that would prevent over-extending existing wastewater systems and impacting users by requiring applicants for future development projects to provide proof that wastewater needs can be met. In the case of discretionary projects, the proof would be in the form of a "Can and Will Serve" letter required

from the relevant sewer and/or water district prior to receiving project approval. For proposed developments, it must be demonstrated to the County that they have approval from the sewer and/or water district for additional service before being issued a building permit. Similarly, on-site systems outside of district "service boundaries" must show that they have approval from the County Health Department.

Needed infrastructure may include pump stations, collection piping, and treatment and disposal facilities. Construction of new and expanded wastewater treatment, collection, and disposal systems could result in potential short-term noise, air quality, biological resource, cultural resource, traffic, and water quality impacts from construction activities including excavation, stockpiling, hauling, and pipe flushing. Long-term impacts could include the loss or degradation of agricultural, biological, and cultural resources, use of hazardous substances for water treatment, and potential contamination of surface water and groundwater supplies. See Table 20-12 for a listing of potential effects by environmental issue area.

Prior to construction and activation of any new wastewater treatment facility, a NPDES wastewater permit and/or Waste Discharge Requirement (WDR) permit must be applied for and obtained through the Central Valley Regional Water Quality Control Board. A NPDES/WDR permit would be required if discharge from the wastewater treatment plant were to go to surface waters. WDRs would be required for a proposed discharge only to land. Once approved, operation of the wastewater facilities would require that certain discharge and contaminant limits must be met, and monitoring would be required to ensure compliance. Should violations of the NPDES/WDR permit occur, wastewater treatment plant operators would be required to revise plant operations, processes, or equipment to assure that NPDES/WDR requirements are met.

Although the 2030 General Plan would result in future development leading to increased demands for wastewater collection, treatment, and disposal infrastructure, the exact amount, location, and type of infrastructure needed cannot be not known at this time. Further, future facility construction plans would be evaluated on a case-by-case basis, and undergo project-level environmental review, which would ensure additional compliance with specific federal, state, and local regulations designed to avoid or reduce environmental effects. The potential environmental effects of constructing and operating new and expanded utility infrastructure to support development identified in the 2030 General Plan within designated urban areas and from the development of scattered rural residential uses, agriculturally related industries, and surface mines are evaluated in Chapters 5 through 22 of this Draft PEIR. There would be no additional programmatic impacts beyond those identified for unincorporated area development in general.

With implementation of these 2030 General Plan wastewater policies, the potential effects of increased urban development on wastewater collection, treatment, and disposal capacity would be avoided. Potential water quality effects from the disposal of treated wastewater are comprehensively regulated by the State. Finally, the programmatic impacts arising from the construction and operation of necessary wastewater infrastructure are summarized in Table 20-12 and evaluated in Chapters 5 through 22 of this Draft PEIR. There would be no new impacts or need for additional programmatic mitigation measures not identified elsewhere in this Draft PEIR. For these reasons, the potential impact on wastewater infrastructure would be less than significant.

Significance of Impact: Less than significant.

Mitigation Measure: None required.

Impact USS-4: Require new or substantial alteration of existing solid waste disposal facilities, and comply with federal, State, and local statutes and regulations related to solid waste.

Implementation of the 2030 General Plan could result in an increased demand for solid waste handling and disposal facilities. Because both landfills in the county have adequate capacity through the year 2050 to accommodate planned growth, and both facilities are operating within their regulatory requirements, this would be a less-than-significant impact.

Merced County has two active landfill disposal sites that are operated by the MCAG Regional Waste Management Authority: the Highway 59 Disposal site, and the Billy Wright Landfill. The Highway 59 Disposal site includes a Household Hazardous Waste Collection Facility that temporarily stores various household hazardous wastes such as batteries, paints, and pool chemicals for hauling to disposal sites outside of the county. There is one transfer station permitted and planned at Billy Wright Landfill, and waste collection and hauling services are primarily provided via two private companies.

Over 224,000 tons of solid waste are buried annually in Merced's two landfills, and as of 2006 the County diverted 71 percent of the total waste prior to it entering the landfill. At existing and proposed disposal rates, the Highway 59 Landfill would reach capacity in 2050 and the Billy Wright Landfill with its recently approved expansion would reach capacity in 2054. Assembly Bill 341, signed into effect in 2011, extends the useful life of landfills throughout the state by increasing the diversion goal of solid waste from 50 percent to 75 percent. According to CalRecycle, both facilities are currently operating within the conditions and limits of their permits (Calrecycle 2012). The Merced County Public Works and the Solid Waste Joint Powers Authority (JPA) assist in supporting the County's solid waste landfill diversion goals.

The 2030 General Plan has Public Facilities and Services Element Goal PFS-4 and its policies to ensure that adequate facilities for disposal and recycling are in place, and public safety and the environment are protected, as set forth in Table 20-16.

Table 20-16 Merced County 2030 General Plan Goals and Policies Relating to Supporting Adequate Solid Waste Collection and Recycling

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Public Facilities and Services Element		
Goal PFS-4	Ensure the safe and efficient disposal and recycling of solid and hazardous waste generated in the County.	States the overall goal for the County to make sure there are adequate solid waste disposal and recycling facilities to meet the County's needs now and into the future.
Policy PFS-4.4: Land Use Compatibility with Solid Waste Facilities	Protect encroachment on solid waste facilities by incompatible uses, such as schools and homes.	Protects continued operation and potential expansion of existing solid waste facilities by ensuring incompatible land uses don't encroach on the land immediately surrounding the landfills.

Table 20-16 Merced County 2030 General Plan Goals and Policies Relating to Supporting Adequate Solid Waste Collection and Recycling

Goal or Policy	Goal or Policy Text	How the Goal or Policy Avoids or Reduces Impact
Policy PFS-4.5: Solid Waste Service Availability	Require all new development to adequately provide solid waste storage, handling, and collection through the development review and permitting process.	Provides the County with a tool to ensure new development solid waste needs are met without causing accelerated landfill utilization to the point that capacity is eliminated before planning efforts can provide for new facilities.
Policy PFS-4.6: Solid Waste Reduction	Support and promote feasible waste reduction, recycling, and composting efforts.	With County support of waste reduction, recycling and composting efforts waste volumes going to the landfills can be reduced and the longevity of the landfills expanded.
Policy PFS-4.7: Composting and Green Waste Facilities	Encourage the proper siting and operation of composting and green waste facilities in rural areas of the County.	

Source: Merced County, 2011; Planning Partners, 2012.

Current and future use of solid waste disposal facilities and compost facilities under the 2030 General Plan would continue to be regulated by the Central Valley Regional Water Quality Control Board and CalRecycle, partnering with the Merced County Division of Environmental Health for enforcement. Permit requests and Reports of Waste Discharge and Disposal Site information are required to be submitted to the agencies so that they may review, authorize, and monitor the site(s) operations for compliance.

With the expected capacity of the two existing landfill sites to extend to at least 2050, and the County's solid waste goals and policies directed at making sure that there are adequate facilities to meet the county's needs through the 2030 General Plan buildout, this impact would be less than significant.

Significance of Impact: Less than significant.

Mitigation Measure: None required.

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