3.14 UTILITIES AND SERVICE SYSTEMS

This section evaluates the adequacy of existing and planned utilities to accommodate the demands and generation associated with implementation of the 2035 Master Plan. Specifically, this section addresses:

- water supply, distribution, and treatment;
- wastewater treatment and disposal;
- solid waste disposal; and
- energy facilities.

Refer to Section 3.6, "Energy," for an analysis of energy efficiency related to implementation of the project pursuant to State CEQA Guidelines, Appendix F requirements. Impacts related to storm water management, groundwater aquifers, and water quality are addressed in Section 3.9, "Hydrology and Water Quality."

Comments related to utilities and service systems that were received in response to the Notice of Preparation (NOP) included concerns regarding water supply and necessary coordination with the City regarding Whale Rock Reservoir, as well as requests for more details regarding the proposed campus water reclamation facility (WRF).

3.14.1 Regulatory Setting

FEDERAL

Clean Water Act

The Clean Water Act (CWA) employs a variety of regulatory and nonregulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The U.S. Environmental Protection Agency (EPA) established primary drinking water standards in Section 304 of the CWA. States are required to ensure that the public's potable water meets these standards.

Section 402 of the CWA creates the National Pollutant Discharge Elimination System (NPDES) regulatory program. Point sources must obtain a discharge permit from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). NPDES permits cover various industrial and municipal discharges, including discharges from storm sewer systems in larger cities, storm water associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre, and mining operations. All so-called "indirect" dischargers are not required to obtain NPDES permits. "Indirect" dischargers send wastewater into a public sewer system, which carries it to the municipal sewage treatment plant, through which it passes before entering a surface water.

Safe Drinking Water Act

As mandated by the Safe Drinking Water Act (Public Law 93-523), passed in 1974, EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary maximum contaminant levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs. EPA has delegated responsibility for California's drinking water program to the State Water Resources Control Board (SWRCB) Division of Drinking Water. SWRCB Division of Drinking Water is accountable to EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by EPA.

STATE

California Code of Regulations, Energy Efficiency Standards

Energy consumption in new buildings in California is regulated by State Building Energy Efficiency Standards (CALGreen) contained in the CCR, Title 24, Part 2, Chapter 2-53. Title 24 applies to all new construction of both residential and nonresidential buildings, and regulates energy consumed for heating, cooling, ventilation, water heating, and lighting. The 2016 Building Energy Efficiency Standards have improved efficiency requirements from previous codes and the updated standards are expected to result in a statewide consumption reduction.

California Fire Code

The 2016 California Fire Code, which is codified at Part 9 of Title 24 of the CCR, incorporates by adoption the 2015 International Fire Code and contains regulations related to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The California Fire Code contains specialized technical regulations related to fire and life safety. The California Building Standards Code, including the California Fire Code, is revised and published every 3 years by the California Building Standards Commission.

California Water Code, Water Supply

According to California Water Code (CWC) Section 10910 (referenced in State CEQA Guidelines Section 15155), local lead agencies (such as Cal Poly), are required to identify the public water system(s) that would serve a project and assess whether the water supply is sufficient to provide for projected water demand associated with a project when existing and future uses are also considered (CWC Section 10910[c][3]). The definition of a water-demand project is the same as State CEQA Guidelines Section 15155.

California Water Code, Water Supply Wells and Groundwater Management

The CWC is enforced by the California Department of Water Resources (DWR). DWR's mission is "to manage the water resources of California in cooperation with other agencies, to benefit the state's people, and to protect, restore, and enhance the natural and human environments." DWR is responsible for promoting California's general welfare by ensuring beneficial water use and development statewide. The laws regarding groundwater wells are described in CWC Division 1, Article 2 and Articles 4.300 to 4.311; and Division 7, Articles 1-4. Further guidance is provided by bulletins published by DWR, such as Bulletins 74-81 and 74-90 related to groundwater well construction and abandonment standards.

Groundwater Management is outlined in the CWC, Division 6, Part 2.75, Chapters 1-5, Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as Assembly Bill (AB) 3030 and has since been modified by Senate Bill (SB) 1938 in 2002, AB 359 in 2011, and AB 1739 in 2014. The intent of the Groundwater Management Act is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a Groundwater Management Plan. More information related to groundwater is provided in Section 3.9, "Hydrology and Water Quality."

Water Conservation Act of 2009

Requirements regarding per capita water use targets are defined in the Water Conservation Act of 2009 that was signed into law in November 2009 as part of a comprehensive water legislation package. Known as SB X7-7, the legislation sets a goal of achieving a 20-percent reduction in urban per capita water use statewide by 2020. SB X7-7 requires that retail water suppliers define in their 2010 urban water management plans the gallons-per-capita-per-day targets for 2020, with an interim 2015 target.

California's Integrated Waste Management Act of 1989

The California Integrated Waste Management Act (CIWMA) of 1989 created the California Integrated Waste Management Board, now known as the California Department of Resources Recycling and Recovery (CalRecycle). CalRecycle is the agency designated to oversee, manage, and track California's 92 million tons of waste generated each year. CalRecycle provides grants and loans to help cities, counties, businesses, and organizations meet the state's waste reduction, reuse, and recycling goals. CalRecycle promotes a sustainable environment in which these resources are not wasted but can be reused or recycled. In addition to many programs and incentives, CalRecycle promotes the use of new technologies to divert resources away from landfills. CalRecycle is responsible for ensuring that waste management programs are carried out primarily through local enforcement agencies.

The CIWMA is the result of two pieces of legislation: AB 939 and SB 1322. The CIWMA was intended to minimize the amount of solid waste that must be disposed of through transformation and land disposal by requiring all cities and counties to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000.

The 50 percent diversion requirement is measured in terms of per capita disposal expressed as pounds per day per resident and per employee. The per capita disposal and goal measurement system uses an actual disposal measurement based on population and disposal rates reported by disposal facilities, and it evaluates program implementation efforts.

Mandatory Recycling Requirements

AB 341 requires CalRecycle to issue a report to the legislature that includes strategies and recommendations that would enable the state to recycle 75 percent of the solid waste generated in the state by January 1, 2020, requires businesses that meet specified thresholds in the bill to arrange for recycling services by July 1, 2012, and also streamlines various regulatory processes.

Mandatory Commercial Organics Recycling Requirements

In October 2014, AB 1826 Chesbro (Chapter 727, Statutes of 2014) was signed into law, requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings of five or more units (multifamily dwellings are not required to have a food waste diversion program, however). Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste.

Short-Lived Climate Pollutant Reduction Strategy

In September 2016, SB 1383 (Lara, Chapter 395, Statutes of 2016) was signed into law, establishing methane emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants in various sectors of California's economy. Actions to reduce short-lived climate pollutants are essential to address the many impacts of climate change on human health, especially in California's most at-risk communities, and on the environment.

As it pertains to solid waste, SB 1383 establishes targets to achieve a 50-percent reduction in the volume of statewide disposal of organic waste from 2014 levels by 2020 and a 75-percent reduction by 2025. The law grants CalRecycle the regulatory authority required to achieve the organic waste disposal reduction targets and establishes an additional target that not less than 20 percent of currently disposed edible food is recovered for human consumption by 2025. To meet these goals, universities would be required to divert organic waste, including edible food, from disposal at landfills. Rulemaking activities associated with SB 1383 are currently in process.

Cal Poly Utility Master Plan

The Cal Poly Utility Master Plan assesses campus-wide water, wastewater, electricity, and gas infrastructure needs. The Utility Master Plan is currently undergoing updates to incorporate projected population growth and proposed development in accordance with the 2035 Master Plan with an expected completion date in early 2020. The Utility Master Plan will serve as a more refined analysis and detailed planning document of the projected campus utility needs based on the 2035 Master Plan. Importantly, this EIR generally takes into consideration and evaluate the potential impacts associated with the provision of new infrastructure contemplated in the Utility Master Plan. For example, the WRF, which is part of the Utility Master Plan, is included as a near-term project of the 2035 Master Plan. In addition, the impact analysis contained herein, as stated in Chapter 2, "Project Description," assumes that up to 1 linear mile of new/replacement utility lines would be constructed each year as part of 2035 Master Plan implementation.

California State University Sustainability Policy

The CSU energy policy, in place since 1978, has been revised over time to incorporate updated energy conservation, on-site and renewable power generation goals, and to elaborate on sustainable building design practices that support these efforts.

The CSU Board of Trustee's (Board's) longstanding policies in energy efficiency and utility management have reduced utility costs and provided campuses with greater control of energy intensive systems. In 2004, the Board adopted sustainable building and design practices to promote efficient buildings with a reduced environmental impact, while serving the campus.

Policies applicable to the 2035 Master Plan are listed below.

Energy Conservation and Utility Management

1. All CSU buildings and facilities, regardless of the source of funding for their operation, will be operated in the most energy efficient manner without endangering public health and safety and without diminishing the quality of education and the academic program.
2. All CSU campuses will continue to identify energy efficiency improvement measures to the greatest extent possible, undertake steps to seek funding for their implementation and, upon securing available funds, expeditiously implement the measures.
3. The CSU will cooperate with federal, state, and local governments and other appropriate organizations in accomplishing energy conservation and utilities management objectives throughout the state; and inform students, faculty, staff and the general public of the need for and methods of energy conservation and utilities management.
4. The CSU will monitor monthly energy and utility usage on all campuses and the Chancellor's Office, and will prepare a systemwide annual report on energy utilization and greenhouse gas emissions. The Chancellor's Office will maintain a systemwide energy database in which monthly campus data will be compiled to produce systemwide energy reporting. Campuses will provide the Chancellor's Office the necessary energy and utility data, such as electricity and natural gas consumption; water and sewer usage; fuel consumed by fleet vehicles, boats, and ships; waste disposal for the systemwide database in a timely manner.
5. Each CSU campus is encouraged to develop and maintain a campus-wide integrated strategic energy resource plan, which will include tactical recommendations in the areas of new construction, deferred maintenance, facility renewal, energy projects, water conservation, solid waste management, and an energy management plan. This plan will guide the overall energy program at each campus.

Water Conservation

1. All CSU campuses will pursue water resource conservation to reduce water consumption by 10 percent by 2016, and 20 percent by 2020 including such steps to develop sustainable landscaping, install controls to optimize irrigation water use, reduce water usage in restrooms and showers, and promote use of reclaimed/recycled water. In the event of a declaration of drought, the CSU will cooperate with the state, city, and county governments to the greatest extent possible to reduce water consumption.

Waste Management

1. Campuses shall seek to reduce the solid waste disposal rate by 50 percent (PRC §42921) by 2016, by 80 percent by 2020, and move to zero waste.
2. The CSU will encourage the reduction of hazardous waste to the extent possible while supporting the academic program.

Sustainable Procurement

1. Campuses will promote use of suppliers and/or vendors that reduce waste, re-purpose recycled material, or support other environmentally friendly practices in the provision of goods or services to the CSU under contract. This may include additional evaluation points in solicitation evaluations for suppliers integrating sustainable practices.
2. To move to zero waste, campus practices should: (1) encourage use of products that minimize the volume of trash sent to landfill or incinerators; (2) participate in the CalRecycle Buy-Recycled program or equivalent; and (3) increase recycled content purchases in all Buy Recycled program product categories.
3. Campuses shall continue to report on all recycled content product categories, consistent with PCC [Public Contract Code] § 12153–12217 and shall implement improved tracking and reporting procedures for their recycled content purchases.

Regarding the policies/goals of the sustainability policy, CSU is demonstrating ability to achieve the goals established. For example, in 2015, the CSU, systemwide, had achieved a 19 percent reduction in overall water consumption (CSU n.d.). In addition, Cal Poly was one of eight CSU campuses (out of 23 campuses) to achieve waste diversion rates of 89 and 86 percent in 2016 and 2017, respectively.

LOCAL

Cal Poly, as a state entity, is not subject to municipal regulations of local governments for uses on property owned or controlled by Cal Poly that are in furtherance of the University's education purposes. However, Cal Poly may consider, for coordination purposes, aspects of local plans and policies for the communities surrounding the Master Plan Area when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

San Luis Obispo County General Plan

The San Luis Obispo County General Plan contains the following goals and policies pertaining to utilities (County of San Luis Obispo 2010):

- **Policy WR 1.1: Protect Water Supplies**. Continue to coordinate with water suppliers and managers to identify water management strategies to protect existing and secure new water supplies.
- **Policy WR 1.2: Conserve Water Resources**. Water conservation is acknowledged to be the primary method to serve the county's increasing population. Water conservation programs should be implemented countywide before more expensive and environmentally costly forms of new water are secured.
- **Policy WR 1.4: Use Reclaimed Water**. The County will be a leader in the use of reclaimed water. Support expanding the use of reclaimed water to make up at least 5 percent of total water use by 2015 and 10 percent of total water use by 2020.
- **Policy WR 1.5: Interagency Projects**. Help implement interagency projects, including emergency inter-ties between systems, jointly developed facilities, water exchanges, and other methods of enhancing reliability through cooperative efforts.
- **Policy WR 1.7: Agricultural Operations**. Groundwater management strategies will give priority to agricultural operations. Protect agricultural water supplies from competition by incompatible development through land use controls.

City of San Luis Obispo General Plan

The City of San Luis Obispo General Plan contains the following policies pertaining to utilities (City of San Luis Obispo 2014, 2018):

- **Policy 1.13.10: Solid Waste Capacity**. In addition to other requirements for adequate resources and services prior to development, the City shall require that adequate solid waste disposal capacity exists before granting any discretionary land use approval which would increase solid waste generation.
- **Policy A 3.2.1: Basis for Planning**. The City will plan for future development through the Land Use Element taking into consideration available water resources from the Salinas, Whale Rock, and Nacimiento Reservoirs and recycled water.
- **Policy A 3.2.2: Coordinated Operation**. The City will coordinate the operation of the Salinas, Whale Rock, and Nacimiento Reservoirs to maximize available water resources.
- **Policy A 3.2.3: Groundwater**. The City will continue to use groundwater to enhance the resiliency of the City's water supply portfolio.
- **Policy B 3.2.1: Treating Wastewater**. The City will treat all wastewater in compliance with approved discharge permits.
- **Policy B 3.2.2: Recycled Water Production**. The City will produce high-quality, dependable recycled water, suitable for a wide range of uses.
- **Policy B 3.2.3: Beneficial Use**. The City will pursue treatment and disposal methods which provide for further beneficial use of wastewater and biosolids.
- **Policy B 4.2.1: Collection System Maintenance**. The City will manage the collection system to ensure that the proper level of maintenance is provided and that the flow in sanitary sewers does not exceed design capacity.

3.14.2 Environmental Setting

WATER

Water Supply

Potable water is supplied to Cal Poly through surface water rights to Old Creek via Whale Rock Reservoir. Whale Rock Reservoir is located on Old Creek, approximately one-half mile east of the community of Cayucos. The Whale Rock Reservoir system was planned, designed, and constructed under the supervision of DWR, and became operational in 1961. The reservoir is jointly owned by the City, the California Department of Corrections and Rehabilitation's California Men's Colony, and Cal Poly. These three entities form the Whale Rock Commission, which is responsible for operational policy and administration of the reservoir. The City is responsible for its daily operation (City of San Luis Obispo 2016).

Whale Rock Reservoir is formed by an earthen dam and was estimated to have a capacity of 40,662 acre-feet (AF) at the time of construction. Facilities associated with the reservoir include a 30-inch pipeline, two pumping stations, maintenance facility and offices, and a building used as a private residence. The pipeline is approximately 17 miles long, connecting the reservoir to the member agencies, and terminating at the City's water treatment plant. The design capacity of the pipeline is 18.94 cubic feet per second. The conveyance system delivers water from the reservoir to the Whale Rock Commission member agencies (City of San Luis Obispo 2016).

The safe annual yield of Cal Poly's water right to Old Creek is 959 acre-feet per year (afy) or 856,082 gallons per day (gpd), which is provided to Cal Poly from Whale Rock Reservoir. Cal Poly's share is conveyed first to the City's water treatment plant (WTP), discussed in more detail below. The City then conveys potable water to Cal Poly, consistent with Cal Poly's water right. Currently, approximately 320 AF of Cal Poly's annual share of 959 AF of water from Whale Rock remains untreated and is conveyed via a contract line to campus for irrigation of agricultural uses on campus (Watearth 2019a).

Whale Rock Reservoir operates under an assumed Safe Yield, which is the quantity of water that can be sustainably withdrawn every year considering dry and multiple dry year conditions. The City maintains a model that estimates safe annual yield (SAY) from Whale Rock Reservoir, based on historical climatic conditions and reservoir operations. The model includes parameters for the historical record of inflows, evaporation, precipitation, and downstream releases, which are used to determine the maximum allowable annual withdrawal, or SAY.

In 2017, Cal Poly and the City began updating the SAY model. The update was intended to verify the historical input data, validate and document the calculations in the model, incorporate the full extent of the 2006–2016 drought, and generate scenarios that accounted for potential climate change impacts. This process indicated that the SAY is 4,910 afy, approximately 2,000 afy less than the 6,940 afy used in previous planning documents (Water Systems Consulting Inc. 2018, City of San Luis Obispo 2019).

A portion of Cal Poly's total nonpotable agricultural demand is currently met via the existing Whale Rock supplies, while the remainder of nonpotable water demands are met by groundwater pumped from groundwater wells managed by Cal Poly. Currently, Cal Poly pumps 120 afy of groundwater for agricultural purposes. All nonpotable water for agricultural use is managed on-campus through a series of reservoirs on campus for water storage (Watearth 2019a).

Water Treatment and Conveyance

The City provides water treatment and water conveyance to the campus for potable and nonpotable water. Cal Poly has agreements with the City to treat and convey up to 1,000 afy (892,682 gpd on an average day and 1.44 million gallons per day [mgd] during a peak day) of potable water from the City's WTP, which has a capacity to treat up to 16.0 mgd, at Stenner Canyon to the campus. The City's WTP is located on Stenner Creek Road, northwest of the campus. The facility was constructed in 1964 to provide treatment of surface water from Salinas and Whale Rock Reservoirs. The WTP is a conventional plant that includes ozone disinfection, coagulation, flocculation, sedimentation, and filtration. The capacity of the WTP is 16.0 mgd (City of San Luis Obispo 2016).

The City's 24-inch potable water main goes through campus, serving seven metered connections. The Academic Core subarea includes a 1,000,000-gallon in-ground storage tank, a 30,000-gallon elevated storage tank, and a 500,000-gallon elevated storage tank for reliable service of potable water demands and to provide adequate volume for firefighting purposes. Cal Poly owns and maintains water supply conveyance piping, including providing fire flows to their buildings, throughout the campus (Watearth 2019a).

Water Conservation Measures

As part of an indoor water audit, Cal Poly has identified fixtures, including toilets, urinals, faucets, and showerheads in existing buildings for replacement with low-flow alternatives. Approximately 50 percent of the fixtures were replaced by the end of 2018, and Cal Poly intends to replace the remaining fixtures within the next several years. In addition, irrigation water demands were reduced through system upgrades and replacement of turf with drought resistant plants and xeriscapes (Watearth 2019a).

Water Demand

Water demand rates associated with Cal Poly, similarly to other universities, varies throughout the year and relates to the academic calendar. Generally, potable water demand associated with on-campus development peaks from mid-September through mid-June when on-campus population is highest. Irrigation and other basic building demands vary throughout the year, including summer when most students leave campus, but irrigation needs may be higher during summer months due to higher temperatures and less rainfall. Based on water use data, campus water demand is provided in Table 3.14-1 (Watearth 2019a). Peak demands shown in Table 3.14-1 were derived from the City's 2015 Water Master Plan, which uses a peaking factor of 1.5 and 4.0 for peak daily and peak hourly demands, respectively. These peak demands are estimated to assist utility providers, like the City, in anticipating and being able to continue to provide reliable utility service during periods of high demand that may occur in a given day or at certain times of year. With respect to peak hourly demand, it is standard engineering practice to report peak hourly water demands in terms of mgd to provide an equivalent "estimated" peak hourly demand for ease of comparison and understanding. This factor can be readily converted to other units such as for minutes, days, or hours when useful for other purposes.

Table 3.14-1 Cal Poly Water Demand

	Annual Average Water Demand (gpd)	Academic Year Demand (gpd)	Summer Demand (gpd)	Peak Daily Demand (mgd)	Peak Hourly Demand (mgd)
Water Demand	813,288	729,805	938,685	1.220	3.253

Notes: gpd=gallons per day; mgd= million gallons per day. Peak factors of 1.5 and 4.0 were obtained from the City of San Luis Obispo 2015 Master Plan and applied to average daily demands.

Source: Watearth 2019a

WASTEWATER

Wastewater Treatment and Transmission Agreements between Cal Poly and the City

Since 1957, Cal Poly has purchased capacity rights to the City's wastewater transmission (collection) lines and treatment capacity at the City's Water Resource Recovery Facility (WRRF). Cal Poly has participated in cost-sharing of conveyance infrastructure and wastewater treatment improvements and has an agreement for rate structure and capacity share. The current treatment agreement was established in 1993 for a permanent wastewater treatment capacity share of 0.471 mgd from the City's WRRF, while Cal Poly's 1.2-mgd share of the wastewater transmission line capacity dates to 1986, when the City and Cal Poly passed Resolution 5961 agreeing to the capacity share.

A Memorandum of Understanding (MOU) between the City and Cal Poly in May 2007 reinforced this agreement. The MOU includes water treatment capacity average demand equivalent of 1,000 AF as calculated on an annual basis and wastewater daily dry weather flow as calculated on a monthly average of 0.471 mgd. The agreement includes sewer rates specific to Cal Poly, based on its capacity share in the wastewater system. The City's WRRF is designed for an average daily dry weather flow of 5.1 mgd, of which Cal Poly's interest is 9.2 percent. There are no specific peak daily or peak wet weather flow limitations for wastewater treatment capacity set forth in the MOU.

A pretreatment agreement between Cal Poly and the City is consistent with Cal Poly's Class I – Significant Industrial Waste Discharge Permit (Permit No. 259-S). Cal Poly's permit limits the concentration of common wastewater constituents found in the effluent from large facilities such as Cal Poly. The permit also contains provisions for monitoring and reporting requirements as well as compliance schedules.

Wastewater Collection and Treatment System

Cal Poly's wastewater system collects wastewater from residential, mixed-use, and academic buildings; recreational facilities; and other wastewater generating sources within the campus boundaries. Wastewater flows are primarily collected and conveyed by gravity lines and pumped by a lift station through a force main. Cal Poly's wastewater discharges to a single collection point near Mustang Drive, southwest of the campus's stadium, via a 15-inch sewer line. From this collection point, approximately 4 miles of pipeline ranging from 10 to 48 inches deliver wastewater from Cal Poly and university facilities outside the campus (e.g., Chorros Street Lofts, Bella Montaña Housing, and Chorro State Offices) to the City-owned and -operated WRRF. As noted above and per an existing agreement with the City, Cal Poly's share of the transmission capacity of the existing wastewater transmission line to the WRRF is 1.2 mgd, while Cal Poly has a 0.471-mgd share of the WRRF's average flow treatment capacity based on existing agreements (Watearth 2019b).

The City's WRRF is located on Prado Road, adjacent to U.S. Highway 101, in the southern portion of the city. The WRRF is currently designed for an average dry weather flow of 5.1 mgd, with a 2015 average daily flow of 2.74 mgd. As noted above, there is no specific peak daily or peak wet weather flow specified for treatment capacity at the WRRF, although the City considers wet weather to occur between December and March (Watearth 2019b). The WRRF modifies operations in the event of wet weather conditions that result in additional peak daily flows at the facility. The WRRF discharges a minimum of 1,807 afy to San Luis Obispo Creek to support habitat for anadromous fish species. In addition, the WRRF produces recycled water, which is used to irrigate landscaped areas along the highway corridor through the city (City of San Luis Obispo 2016). The City is also in the process of upgrading its WRRF to provide additional water recycling and some increase in average dry weather flow capacity (City of San Luis Obispo 2019b).

Wastewater Flows

Table 3.14-2 summarizes monthly average wastewater flows at Cal Poly.

Table 3.14-2 Wastewater Flows

Month	Average Flow (gpd)
September	169,558
October	282,597
November	239,447
December	118,931
January	275,585
February	293,6658
March	220,674
April	294,168
May	269,382
June	136,153
July	46,571
August	34,819
Average	197,557

Note: gpd=gallons per day.

Source: Watearth 2019b

Table 3.14-3 summarizes the annual average flow, average dry weather flow, peak dry weather flow, and peak wet weather flow from Cal Poly into the City's wastewater system as modeled in SewerCAD, a sanitary sewer modeling and design software product used by numerous municipalities, including the City. Based on use of the City's sewer model, current average flows from campus to the City are approximately 200,000 gpd with the potential for peak day wet weather flows of 2.3 mgd. Of note, measured peak flows between 2015 and 2017 from campus were substantially less than modeled. Measured peak day wet weather flows from Cal Poly into the City's wastewater system varied between a high of 374,892 gpd in 2015 and 665,702 gpd in 2017 (Veium, pers. comm., 2019).

Table 3.14-3 2015 Wastewater Generation at Cal Poly

Wastewater Flow Type	Daily Flow (gpd)
Average Annual Flow	197,557
Average Dry Weather Flow	284,482
Peak Dry Weather Flow	739,653
Peak Wet Weather Flow	2,308,597

Note: gpd=gallons per day.

Source: Watearth 2019b

SOLID WASTE

Cal Poly contracts with San Luis Garbage for the collection of solid waste and recycling of waste generated at the campus. Recycling containers are provided to faculty, staff, and students by Facility Services, and collection is performed by Custodial Services, Landscape Services, and the campus Recycling Coordinator. The total waste generated at Cal Poly in 2018, by waste stream, is provided in Table 3.14-3.

Table 3.14-3 Cal Poly Waste Generated in 2018

Waste Stream	Tons
Recycled	739
Composted	663
Donated/Resold	102
Solid Waste	2143
Total Consumer Waste Generated	3,647

Source: Nicole, pers. comm., 2019

San Luis Garbage hauls trash to one of three local/regional landfills (as shown in Table 3.14-4), recyclables to the Cold Canyon Materials Recovery Facility (MRF), and organics to a dry anaerobic digestion plant located near the San Luis Obispo Airport. There are three solid waste disposal facilities within San Luis Obispo County. The maximum permitted throughput, remaining capacity, estimated closure date, and facility type is shown in Table 3.14-4 below.

Table 3.14-4 Solid Waste Disposal Facilities

Name of Facility	Maximum Permitted Throughput	Remaining Capacity	Closure Date	Facility Type	Waste Type
City of Paso Robles Landfill	450 tons/day	4,216,402 cubic yards	10/1/2051	Solid Waste Facility	Agricultural, construction/demolition, green waste, industrial, metals, mixed municipal, sludge (biosolids), tires, wood waste
Cold Canyon Landfill	1,650 tons/day	14,500,000 cubic yards	12/31/2040	Solid Waste Facility	Agricultural, construction/demolition, contaminated soil, dead animals, industrial, inert, mixed municipal, sludge (biosolids), tires
Chicago Grade Landfill	500 tons/day	6,022,396 cubic yards	12/31/2039	Solid Waste Facility	Agricultural, asbestos, construction/demolition, contaminated soil, dead animals, food waste, green waste, industrial, inert material, metals, mixed municipal, other designated waste, sludge (biosolids), tires

Sources: CalRecycle 2019a, 2019b, 2019c

Recycling and Composting

Collected recyclable materials are sent to the Cold Canyon MRF for sorting and baling. The MRF, located in San Luis Obispo, accepts recyclables such as glass, aluminum (cans and foil), paper products (i.e., cardboard, pizza boxes, magazines, and office paper), and some plastics. Campus Dining and Facilities Management and Development partner with Engle and Gray, a licensed facility in Santa Maria, to compost pre-consumer food scraps from dining facilities and post-consumer compostable items from large events. About 200 tons of food waste from Campus Dining is composted annually. Food scraps are also collected at student apartments on an opt-in basis to ensure the highest quality and least contamination (Cal Poly 2019a).

Cal Poly Agriculture Operations performs onsite composting of manure, along with approximately 2,500 cubic yards of green waste generated from campus landscaping maintenance. The resulting 3,500 cubic yards of finished compost is used on the student-run organic farm, campus landscaping, and Cal Poly crops for soil amendment, reducing the need for chemical fertilizer (Cal Poly 2019a).

The recycling and composting practices are intended to reduce waste generation of ongoing consumables on campus by meeting a minimum waste diversion threshold of at least 50 percent of ongoing waste and at least 75 percent of all durable goods by volume (or weight), from all sources, except facility maintenance, construction and renovation projects. As described above, Cal Poly has a sustainability policy goal to reduce per-capita landfill disposal by 80 percent by 2020, with the ultimate goal of achieving zero net waste for the entire campus. Since 2006, Cal Poly has achieved a 38 percent reduction in per capita solid waste disposal. Cal Poly also achieved waste diversion rates of 89 and 86 percent in 2016 and 2017, respectively. Cal Poly operates an integrated waste management program that includes source use reduction, comingled recycling, composting of green waste and manure, resale of scrap metal and surplus equipment, and zero waste event catering (Cal Poly 2019b).

ENERGY FACILITIES

Electricity

Cal Poly purchases approximately 92 percent of its electricity from Pacific Gas and Electric Company (PG&E) and generates the other 8 percent on site from a combination of solar photovoltaics and cogeneration. Approximately 25 percent of this use is offset by Cal Poly's 4.5-megawatt Gold Tree solar farm. Cal Poly has implemented numerous energy conservation projects to reduce electrical usage, including fluorescent and light-emitting-diode (LED) lighting retrofits; occupancy sensors; heating, ventilation, and air conditioning (HVAC) equipment upgrades; variable frequency drives for pumps and fans; and installation of digital energy management systems. In spite of the fact that the campus square footage has grown dramatically in recent years, electricity use has remained relatively flat, indicating that conservation efforts have been able to offset growth (Cal Poly 2019c).

Electricity is supplied to the main campus through the University-owned Mustang Substation. Power is received from PG&E at a transmission level of 70,000 volts and is transformed at Mustang Substation to either 12,470 volts or 4,160 volts for distribution to campus buildings. Electrical distribution facilities in the campus core are all underground, while distribution to outlying agricultural areas is via overhead lines. Mustang Substation and all campus distribution systems are owned by the University and maintained by the campus Electric Shop (Cal Poly 2019c).

Natural Gas

Most natural gas use on campus is for space heating, production of domestic hot water, cooking, and heating of swimming pools. Natural gas is procured from the Southern California Gas Company and provided by the California Department of General Services (DGS), as part of a managed portfolio including nearly all CSU and University of California campuses, California state administrative buildings, California Department of Corrections and Rehabilitation, and various cities, counties, and school districts (Cal Poly 2019d).

Cogeneration

Cogeneration, or Combined Heat and Power, is a technology in which a single system and fuel source are used to provide two useful energy outputs at the same time. Conventional simple cycle utility power plants, such as the Diablo Canyon nuclear power plant, must dispose of waste heat to the atmosphere, ocean, lakes, or rivers. These large-scale utility power plants typically have total system efficiencies of approximately 35 percent, meaning that 65 percent of the energy available in the fuel is wasted, resulting in increased greenhouse gas emissions and other environmental impacts. Cogeneration systems seek to capture this waste heat and use it for space heating, production of hot water, heating of swimming pools, and other process use. Cogeneration systems are capable of total system efficiencies of 80 percent or more, resulting in substantial energy cost savings and reduced greenhouse gas emissions compared to conventional systems. Cal Poly has one cogeneration facility in the housing areas that provides Combined Heat and Power to student apartments (Cal Poly 2019d).

Telecommunications

ResNet is the system that provides a high-speed data connection to the Internet for on-campus residents. This includes all of the residence halls (Yosemite, Sierra Madre, South Mountain, North Mountain) and apartments (Cerro Vista and Poly Canyon Village). In addition, Cal Poly's Information Technology Services designs, installs, and maintains the wired network infrastructure on campus, including academic and administrative facilities. WiFi connections are also available on campus to students, staff, and visitors and are similarly managed by Cal Poly's Information Technology Services (Cal Poly 2019e, 2019f).

3.14.3 Environmental Impacts and Mitigation Measures

ANALYSIS METHODOLOGY

Water and Wastewater

The analysis of water and wastewater capacity is derived from technical studies originally prepared in 2016, when the master plan process began, and updated in 2019. The final Water Supply Assessment is included in Appendix H and the final Wastewater Analysis is included in Appendix I. These studies used a 2015 baseline to provide a full year of recent data. Although population levels, and thus demand for water supply and wastewater conveyance and treatment have increased at Cal Poly between 2015 and 2018, the technical studies provide adequate information to evaluate the environmental impacts related to water and wastewater because using a 2015 baseline in comparison to buildout of the 2035 Master Plan (expected in approximately 2035) would result in a conservative analysis.

Water

The analysis of water supply is based on information included in *Water Supply Assessment for California Polytechnic State University, San Luis Obispo for Master Plan 2035* (Watearth 2019a). The methodology is intended to identify increases in water demand on existing and proposed water sources. Several standard factors were calculated to identify impacts based on the proposed project elements compared to existing water demand. Key factors included proposed buildings by type of use and size, water conservation efforts by land use type, and future development and operation of the proposed on-campus WRF. The 2035 Master Plan elements are intended to be phased during the planning period to allow for analysis in 5-year increments including 2015 (baseline year), 2020, 2025, 2030, and 2035 (buildout). The City's existing water conveyance system was evaluated using the City-supplied WaterCAD model to conduct node-specific checks on capacity needs based on the proposed phases of development and changes in demand from the City's WTP, to the campus, and downstream of campus. In addition, the water supply and capacity analysis assumes that the nonpotable water demands of campus that are currently met via a portion of the existing Whale Rock water right would be transitioned over time to the nonpotable water supplies available via the on-campus WRF. Campus would then use the previous nonpotable Whale Rock water supplies to provide additional potable water supplies to meet the needs of campus under the 2035 Master Plan. Cal Poly would continue to pump up to 120 afy of groundwater for agricultural purposes (Watearth 2019a). As Cal Poly would not increase agricultural operations as part of the 2035 Master Plan, increases in nonpotable water demands associated with agriculture are not anticipated.

Wastewater

The wastewater analysis is based on information included in *Wastewater Analysis for California Polytechnic State University, San Luis Obispo for Master Plan 2035* (Watearth 2019b). The methodology is intended to identify potential increases in wastewater flow to the City's WRRF, the limit of which is established by the existing capacity agreement for wastewater treatment and conveyance between the City and Cal Poly. Several standard factors were calculated to identify impacts based on the proposed project elements compared to existing wastewater flows. Key factors included proposed buildings by type of use and size, water conservation efforts by land use type, and the proposed on-campus WRF. As described above for water, the 2035 Master Plan project elements are intended to be phased to allow for analysis in 5-year increments including 2015 (baseline), 2020, 2025, 2030, and 2035 (buildout). The City's existing wastewater collection system was evaluated using the City-supplied SewerCAD model to conduct node-specific checks on capacity needs based on the proposed phases of development and changes in flows to the City WRRF.

Solid Waste

This analysis evaluates the potential for increased waste generation under the 2035 Master Plan, based on the following generation rates, which were developed using Cal Poly data from CalRecycle's State Agency Reporting Center: 5.29 pounds/person/day for employees and 0.77 pounds/person/day for nonemployees (Nicole, pers. comm., 2019). In addition, campus policies and procedures were evaluated for consistency with attainment of solid waste reduction goals, and other statutes and regulations associated with solid waste.

Electricity, Natural Gas, and Telecommunications Facilities

The analysis pertaining to the construction and relocation of electrical, natural gas, and telecommunications facilities is based on discussions with Cal Poly staff regarding the current level of on-campus facilities, the current status of the Utility Master Plan, potential demands associated with the 2035 Master Plan, and potential improvements to on-campus facilities.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the CEQA Guidelines, a utilities and service systems impact would be significant if implementation of the 2035 Master Plan would:

- require or result in the relocation or construction of new or expanded water, or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects;
- have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years;
- result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand, in addition to the provider's existing commitments;
- generate solid waste in excess of state or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or
- fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

ISSUES NOT DISCUSSED FURTHER

As noted above, Section 3.9 "Hydrology and Water Quality," reviews project impacts to stormwater drainage facilities. Therefore, this issue is not discussed further within this section.

Increases in Water Demands Associated with Fire Flow

The main line for fire flows connects to the City's water distribution system by feeding into the 1,000,000- and 500,000-gallon storage tanks through the main connection. These storage tanks then connect to Cal Poly's system through a 10-inch pipe to Cerro Vista and a 12-inch pipe that continues through the Cal Poly campus where it forms a loop beneath North Perimeter and South Perimeter roads, and connects under University Drive. The size of this main line varies from 10 to 12 inches. Each building has specific flow rate requirements based on size and installed sprinklers. On-campus tanks are operated and would continue to be operated as part of the 2035 Master Plan to ensure an adequate volume for firefighting purposes to meet or exceed flow rates established for each building under existing conditions and under the 2035 Master Plan consistent with California Fire Code requirements (Watearth 2019a). Thus, no additional instantaneous water demand associated with fire flow would occur with implementation of the 2035 Master Plan, and this issue is not discussed further.

Increases in Demand for Groundwater

Cal Poly pumps 120 afy of groundwater for agricultural purposes. Groundwater demand would not change under the 2035 Master Plan and is not evaluated further in term of water supply availability. See Section 3.9, "Hydrology and Water Quality," for more information related to groundwater.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.14-1: Require or Result in the Relocation or Construction of New or Expanded Water Infrastructure

Implementation of the 2035 Master Plan would increase the volume of potable water conveyed through the existing City connections. Modeling indicates that there is adequate conveyance capacity to accommodate anticipated development associated with the 2035 Master Plan under average day demand, peak daily demand, and peak hourly demand. New campus development would require connections to water supply pipelines. Because the campus already contains substantial pipelines and water delivery infrastructure, construction of additional infrastructure to connect new academic buildings, student housing, and other development to the existing system is expected to be minor, consisting of relatively short pipeline connections to the existing delivery pipeline. Thus, the impact would be **less than significant**.

Water originating from Whale Rock Reservoir is pumped to the City's treatment plant and conveyed through City pipelines to Cal Poly. Implementation of new development in accordance with the 2035 Master Plan would increase the volume of water conveyed through the existing City infrastructure. Modeling indicates that the City could provide adequate potable conveyance capacity to accommodate anticipated development under average day demand, peak daily demand, and peak hourly demand. In addition, and as explained in further detail below (see Impact 3.14-3), the current agreement between the City and Cal Poly allows for Cal Poly to receive up to 1,000 afy (892,682 gpd) of treated water supplies from the City's Stenner Canyon Water Treatment Plan, which would not need to be increased with implementation of the 2035 Master Plan. While some adjustments to the system, such as increased pumping to reservoirs or storage tanks may be necessary, no new additional infrastructure upgrades would be needed to meet Cal Poly demands served by the City's potable water distribution system.

As it relates to on-campus pipelines and other infrastructure associated with development under the 2035 Master Plan, it is reasonable to assume that new facilities would be placed in areas where water supply utility infrastructure is available, such as adjacent to other developed uses. Connections to the existing water systems would be expected to occur within existing roadways or would consist of short connections to existing pipelines. Thus, because the City water conveyance system is adequate to meet increased demands associated with the 2035 Master Plan, and connections to new facilities would result in minimal disturbance, this impact would be **less than significant**. Further, the impacts associated with such new connections are generally assessed as part of the proposed development under the 2035 Master Plan, within the context of this EIR.

Mitigation Measures

No mitigation is required.

Impact 3.14-2: Require or Result in the Relocation or Construction of New or Expanded Electricity, Natural Gas, or Telecommunications Facilities

Implementation of the 2035 Master Plan could require new electrical infrastructure, natural gas, and telecommunication infrastructure to support new facilities. The construction impacts anticipated to result from implementation of the 2035 Master Plan, including the construction or undergrounding of energy transmission and/or distribution lines, are located within the 2035 Master Plan's development footprint, and comprehensively analyzed in this EIR. Thus, the potential impacts resulting from the extension of utility infrastructure to serve new/redeveloped land uses within the campus are considered to be evaluated within the scope of this EIR's analysis, and additional significant impacts would not occur. Thus, this impact would be **less than significant**.

Under the 2035 Master Plan, there would be a substantial increase in energy demand, particularly due to growth related to new residence halls, office space, and academic buildings. In addition, per Cal Poly's sustainability goals and as part of the Utility Master Plan, the campus is examining the potential for additional vehicle charging stations. The majority of new demand would be associated with electricity; natural gas use is not consistent with the goal of carbon neutrality by 2050. As a result, demand for natural gas is anticipated to decrease over time, thereby removing the potential need for new/expanded facilities. Telecommunication facilities would be installed to provide internet services to residential and nonresidential buildings.

Implementation of the 2035 Master Plan could increase energy usage as noted above, although electricity usage by Cal Poly in recent years has remained relatively flat. This is due, in part, to conservation/sustainability efforts that have offset the potential increase in electricity demand that would otherwise have occurred with the development of new campus facilities (Cal Poly 2019c). In addition, energy suppliers (PG&E, DGS, and Southern California Gas Company) periodically prepare load forecasts to ensure the reliability of electricity and natural gas distribution systems. As implementation of the 2035 Master Plan would occur over a multi-year period, the projected energy demands would be factored into load forecasts now and in the future. This, coupled with the energy conservation efforts of campus, would ensure that adequate services would be met over the planning period.

As part of 2035 Master Plan implementation, the following utility improvements may be necessary, (Murphy, pers. comms., 2019) and have been analyzed as part of the 2035 Master Plan EIR:

- potential development of an additional Central Plant with heat recovery chillers and hot thermal energy storage;
- installation of both heating and cooling piping to support new buildings on the campus;
- installation of distribution facilities to support new buildings on campus;
- replacement of the existing natural gas boilers and existing chillers in the existing main central plant with new heat recovery chillers backed up by high efficiency condensing boilers;
- expansion of Cal Poly's electrical distribution infrastructure either through improvements at the existing Mustang substation, or through a combination of Mustang substation improvements and the addition of a remote substation to increase electrical capacity and resilience; and
- development of distributed energy resources, such as on-site solar and batteries, to address the electrical load growth.

Cal Poly is currently preparing a Utility Master Plan, which will refine the plan for the provision of upgraded and expanded energy and telecommunications infrastructure associated with the 2035 Master Plan. These improvements are located within the 2035 Master Plan development footprint and evaluated as part of this EIR. For example, the existing Mustang substation (refer to Building 75 of Figure 2-4 of Chapter 2, "Project Description") may be expanded as part of plan implementation. In addition, and as noted in Chapter 2, "Project Description," this EIR assesses the potential impacts associated with approximately 1 linear mile of new utility line construction/replacement, annually. The types of impacts anticipated to result from implementation of the 2035 Master Plan, including the construction of new electrical substations infrastructure and the construction or undergrounding of energy transmission and/or distribution lines, are comprehensively analyzed in this EIR (e.g., within Section 3.3, "Air Quality"; Section 3.5, "Biological Resources"; Section 3.9, "Hydrology and Water Quality"; Section 3.10, "Noise and Vibration"; and Section 3.13, "Transportation"). Further, as required by law, all utility connections would be constructed in accordance with all applicable building codes and applicable standards to ensure an adequately sized and properly constructed energy transmission and conveyance system. Any necessary connections would be constructed prior to occupancy and in a manner that would minimize the potential for utility service disruption of existing uses. Thus, the potential impacts resulting from the extension of utility infrastructure to serve new/redeveloped land uses within the campus are considered to be evaluated within the scope of this EIR's analysis. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.14-3: Have Insufficient Water Supplies Available to Serve the Project and Reasonably Foreseeable Future Development during Normal, Dry and Multiple Dry Years

Development of the 2035 Master Plan would result in increased population levels and development of new buildings, which would increase demand for water supply. Campus water demand would be reduced through conservation measures, transfer of water supply service from Cal Poly to the City, and a new non-potable source would be provided through the development of the WRF. Under the 2035 Master Plan, adequate water supplies would be available to meet future demands if the first phase of the WRF is operational in 2022 and the second phase is operational in 2028. Without the availability of reclaimed water from the WRF, there would not be adequate supplies beginning in 2025. Because the design, timing, and other details of the WRF are not yet established, it cannot be determined with certainty that water supplies would be available to meet increased demand from implementation of the 2035 Master Plan. Thus, the impact on water supply would be **significant**.

Under the 2035 Master Plan, Cal Poly would develop residential and nonresidential (academic, administrative, recreational, and other support services) buildings in support of the projected increase in student enrollment and corresponding increase in academic and other support staff. Construction and operation of these buildings would increase demands on water supply by supporting an increased campus population. New buildings would include landscaping, which would also contribute to increased water demands. Table 3.14-5, below, provides a summary of the projected increases in water demands associated with proposed land uses under the 2035 Master Plan. As shown, total water demand would increase by 339,637 gpd by 2035.

Table 3.14-5 Increases in Water Demand by Year under 2035 Master Plan

	Water Demand (gpd)				
	2015	2020	2025	2030	2035
Residential Projects					
Student Housing Projects[1]	0	0	67,080	105,780	185,760
Nonstudent Housing Projects[2]	0	0	34,650	56,650	56,650
Nonresidential Buildings					
Academic Center Library Addition	0	0	1,745	3,925	6,106
Classroom and Offices Building	0	0	1,102	2,479	3,856
Beef Cattle Evaluation Center Expansion	0	0	434	976	1,518
Engineering Projects Buildings	0	0	1,449	3,260	5,071
Facilities Operations Complex	0	0	2,204	4,958	7,713
Davidson Music Center Renovation/Addition	0	0	346	778	1,211
Building 19 – Dining Commons Renovation and Addition	0	0	1,908	4,293	6,677
Operations and Farm Shop Relocation	0	0	2,211	4,976	7,740
IT Services Consolidation	0	0	230	516	803
Fermentation Building	0	0	372	838	1,303
Vista Grand	0	0	261	587	913
Health Center	0	0	1,422	3,200	4,977
Tech Park Expansion	0	0	2,232	5,021	7,811
Landscape Projects					
All Landscape Projects	0	0	25,890	31,246	43,744
Total Increased Water Demand	**0**	**0**	**142,900**	**228,058**	**339,637**

Notes: gpd=gallons per day; IT=Information Technology.

1 Consists of five student housing projects, ranging in size from 600 to 2,000 beds.

2 Consists of the Faculty and Staff Workforce Housing (Slack and Grand) by 2025 and the University-Based Retirement Community by 2030.

Water Demand Reductions

During the planning horizon of the 2035 Master Plan, campus is pursuing three major actions that would reduce campus water demand. These actions are summarized below and quantified in Table 3.14-6:

1. **Continued implementation of indoor and outdoor water conservation measures**. As described above in Section 3.14.2, "Environmental Setting," Cal Poly has initiated a comprehensive drought response water management program, including short-term policies and long-range measures, to conform to state-mandated water-efficiency programs and water use reductions. These measures include indoor water conservation measures, such as replacing toilets, urinals, faucets, and showerheads with low-flow alternatives; and outdoor water conservation measures, such as xeriscaping, drought-resistant landscaping, and use of computer-based irrigation controls.
2. **Transfer of water supply service from Cal Poly to the City.** Outside of the 2035 Master Plan process, Cal Poly is working with the City regarding the transfer of utility service for two of Cal Poly's properties (Chorro State and Chorro Lofts) that are located within the City from Cal Poly's water supply service to service by the City. Once executed, water demands associated with these two properties would no longer draw from Cal Poly's 959-afy water allocation from Whale Rock Reservoir.
3. **Development of the WRF.** Cal Poly plans to construct an on-campus WRF in the agricultural area in the West Campus subarea as part of the 2035 Master Plan. The WRF would consist of a plant that uses a bioreactive membrane filter with ultraviolet disinfection to treat Cal Poly's wastewater to tertiary standards for use as reclaimed water. The WRF would be developed over two phases: Phase 1 is planned to be operational in 2022. Phase 2 would be operational in 2028. Each phase would have capacity of 190 afy (169,621 gpd), creating a total of 380 afy (339,242 gpd) of reclaimed water, which would offset demand for raw water from Whale Rock Reservoir, thereby freeing up those potable supplies to serve 2035 Master Plan development (Watearth 2019a).

Table 3.14-6 provides a summary of the water demand reductions that would occur through 2035.

Table 3.14-6 Water Demand Reductions through 2035

Water Demand Reduction Source	Water Demand Reduction (gpd)				
	2015	2020	2025	2030	2035
Indoor Conservation	0	2,232	8,927	8,927	8,927
Outdoor Conservation	0	19,640	72,610	83,918	83,918
Off-campus Properties	0	1,178	1,178	1,178	1,178
On-campus WRF	0	0	169,621	339,242	339,242
Total	**0**	**23,050**	**252,336**	**433,265**	**433,265**

Notes: gpd=gallons per day; WRF=water reclamation facility.

Source: Watearth 2019a

Summary of Water Demand through 2035 under the 2035 Master Plan

Projected water demand through 2035 under the 2035 Master Plan is shown in Table 3.14-7. As indicated, the availability of adequate water supplies through buildout of the 2035 Master Plan is contingent on development of the WRF to reduce nonpotable water demands from Whale Rock Reservoir. As noted above, Cal Poly intends to transition the nonpotable water demands of campus that are currently met via a portion of the existing Whale Rock water right to the nonpotable water supplies available via the on-campus WRF, thereby providing up to 339,242 gpd of recycled water for agricultural purposes. Cal Poly would then use the previous nonpotable water supplies to provide additional potable water supplies to meet the needs of campus under the 2035 Master Plan. However, details related to the development and operation of the WRF, such as design and phasing, have not yet been established. Therefore, it is unknown if the WRF would be available by 2022 to reduce water demand related to Cal Poly's safe annual yield of 959 afy (856,082 gpd) from Whale Rock Reservoir.

Table 3.14-7 also provides a summary of the total water supply available from Whale Rock Reservoir; total water demands under the 2035 Master Plan through 2035; water supply reductions; and the difference between supply and demand, both with and without operation of the WRF.

Table 3.14-7 Summary of Water Supply and Demand through 2035 under the 2035 Master Plan

	Average Day (Gallons per Day)				
	2015	2020	2025	2030	2035
Water Supply					
Whale Rock Reservoir Supply	856,082	856,082	856,082	856,082	856,082
Potable Water Demand					
Baseline Demand	813,288	813,288	813,288	813,288	813,288
2035 Master Plan Demand	0	0	142,900	228,058	339,637
Potable Water Demand Reductions					
Conservation and Off-Campus Properties Demand Reductions	0	23,050	82,715	94,023	94,023
WRF[1]	0	0	169,621	339,242	339,242
Total Potable Water Demand					
Without WRF	813,288	790,238	873,473	947,323	1,058,902
With WRF	813,288	790,238	703,852	608,081	719,660
Adequate Potable Water Supplies Available?					
Without WRF	Yes	Yes	No	No	No
With WRF	Yes	Yes	Yes	Yes	Yes
Comparison of Water Supply and Demand					
Supply - Demand (Baseline + 2035 Master Plan, Without WRF)	42,852	65,844	-17,391	-91,241	-202,820
Supply - Demand (Baseline + 2035 Master Plan, With WRF)[1]	42,852	65,844	152,230	248,001	136,422

Note: WRF=water reclamation facility.

1 Assumes that Phase 1 of the WRF will be online in 2022 and Phase 2 will be completed in 2028

Source: Watearth 2019a

Under the 2035 Master Plan, adequate water supplies would be available to meet future demands if the WRF is operational, such that the first phase is completed in 2022 and the second phase is completed in 2028. Further, based on Cal Poly's existing agreements with the City for water treatment capacity (i.e., up to 0.9 mgd on average and 1.44 mgd on a peak day), adequate treatment capacity would be available to handle the potable water demands of Cal Poly with implementation of the 2035 Master Plan. Without the availability of reclaimed water from the WRF, there would not be adequate supplies beginning in 2025. Because the design, timing, and other details of the WRF are not yet established, it cannot be determined with certainty that water supplies would be available to meet increased demand from implementation of the 2035 Master Plan. Thus, the impact on water supply would be **significant**.

Mitigation Measures

Mitigation Measure 3.14-3: Initiate Operation of the WRF to Ensure That It Can Meet the Offset Demand Associated with Campus Growth

If the initial phase of the WRF is not operational by 2022 or if other near-term 2035 Master Plan projects are constructed before operation of the first phase of the WRF, Cal Poly shall not initiate operation of any new facilities or developments until such time as the WRF's treatment capacity and recycled water supplies are available for use, or unless Cal Poly can demonstrate that, notwithstanding delay in WRF operation, adequate water supplies are available to serve the new development. Alternatively, Cal Poly could arrange for the purchase of temporary non-potable water supplies from the

City (within the limits of Cal Poly's existing agreement with the City related to treatment capacity) that could be used to offset the net increase in demand until such time as the first phase of the WRF is operational. If nonpotable water supplies are purchased, these supplies shall be dedicated to agricultural needs and potable water supplies currently used for agricultural purposes shall be diverted for treatment and delivery to the main campus to offset any increase in potable water demand.

Significance after Mitigation

Implementation of Mitigation Measure 3.14-3 establishes performance criteria, related to operation of the WRF, for near-term projects that require adequate water supplies to be available to support the campus through 2035. Because mitigation would prohibit operation of near-term projects without adequate water supplies, the impact would be reduced to a **less-than-significant** level.

Impact 3.14-4: Result in Inadequate Wastewater Treatment Capacity

Under the 2035 Master Plan, Cal Poly development and operation of proposed buildings and increased campus population levels would increase wastewater flows. Several conservation actions would reduce wastewater generation, such as replacing toilets, urinals, faucets, and showerheads with low-flow alternatives. Cal Poly plans to construct an on-campus WRF in two phases, each of which would have a treatment capacity of 190 afy (169,621 gpd), for a total capacity of 380 afy (339,242 gpd). Phases 1 and 2 are expected to be operational in 2022 and 2028, respectively. While general timing of WRF construction and operation are planned, specific timing and other details are yet unknown. Planned water conservation actions would not be sufficient in and of themselves to reduce wastewater generation such that capacity of the City's wastewater conveyance system could accommodate 2035 Master Plan development. Because the timing of adequate wastewater capacity is unknown and development of new campus buildings and facilities could exceed available wastewater treatment capacity, the impact would be **potentially significant**.

Under the 2035 Master Plan, Cal Poly would develop residential and nonresidential (academic, administrative, recreational, and other support services) buildings in support of the projected increase in student enrollment and corresponding increase in faculty and other supporting staff. Development and operation of these buildings would increase wastewater generation and flows by supporting an increased campus population. Table 3.14-8 summarizes the total annual average wastewater flow from Cal Poly and the additional annual average wastewater flow from all proposed residential and nonresidential projects through 2035. As shown, the total wastewater flow would increase by 290,411 gpd through buildout of the 2035 Master Plan.

Table 3.14-8 Increases in Wastewater Generation by Year under 2035 Master Plan

	Wastewater Generation (gpd)				
	2015	2020	2025	2030	2035
Residential Projects					
Student Housing Projects[1]	0	0	65,738	103,664	182,045
Nonstudent Housing Projects [2]	0	0	33,278	54,407	54,407
Nonresidential Buildings					
Academic Center Library Addition	0	0	1,710	3,847	5,984
Classroom and Offices Building	0	0	1,080	2,430	3,779
Beef Cattle Evaluation Center Expansion	0	0	425	956	1,487
Engineering Projects Buildings	0	0	1,420	3,194	4,969
Facilities Operations Complex	0	0	2,160	4,859	7,559
Davidson Music Center Renovation/Addition	0	0	339	763	1,186

	Wastewater Generation (gpd)				
	2015	2020	2025	2030	2035
Building 19 – Dining Commons Renovation and Addition	0	0	1,870	4,207	6,544
Operations and Farm Shop Relocation	0	0	2,167	4,876	7,585
IT Services Consolidation	0	0	225	506	787
Fermentation Building	0	0	186	419	652
Vista Grand	0	0	256	575	895
Health Center	0	0	1,394	3,136	4,878
Tech Park Expansion	0	0	2,187	4,921	7,655
Total Increased Wastewater Flow	**0**	**0**	**114,433**	**192,759**	**290,411**

Notes: gpd=gallons per day; IT=Information Technology.

1 Consists of five student housing projects, ranging in size from 600 to 2,000 beds.

2 Consists of the Faculty and Staff Workforce Housing (Slack and Grand) by 2025 and the University-Based Retirement Community by 2030.

Source: Watearth 2019b

Wastewater Flow Reductions

As noted above for water and during the planning horizon of the 2035 Master Plan, campus is pursuing three major actions that would reduce campus wastewater generation or meet additional wastewater treatment demand: indoor water conservation measures, transfer of wastewater treatment service from Cal Poly to the City for two off-campus Cal Poly properties (Chorro State and Chorro Lofts), and development of the WRF. Through implementation of water recycling and fixture improvements, overall wastewater generation would also be reduced. These actions, described above under Impact 3.14-1, would result in campus-related wastewater generation reductions ranging from 3,341 gpd in 2020 to 349,144 gpd in 2030 and beyond (Table 3.14-9). (See Table 3.14-6 for a summary of total water demand reductions through 2035 from conservation measures.)

Table 3.14-9 Wastewater Generation Reductions through 2035

Source of Reduced Campus Wastewater Generation	Wastewater Generation Reduction (gpd)				
	2015	2020	2025	2030	2035
Indoor Conservation	0	2,187	8,747	8,747	8,747
Off-campus Properties	0	1,154	1,154	1,154	1,154
On-campus WRF	0	0	169,621	339,242	339,242
Total	**0**	**3,341**	**179,523**	**349,144**	**349,144**

Notes: gpd=gallons per day; WRF=water reclamation facility.

Source: Watearth 2019b

Summary of Wastewater Flow through 2035 under the 2035 Master Plan

Table 3.14-10 provides an overview of projected wastewater flows generated by Cal Poly through 2035 with implementation of the 2035 Master Plan. With the existing agreement between Cal Poly and the City to convey and treat a daily dry weather flow of up to 471,000 gpd of wastewater from the campus and baseline wastewater generation of 197,557 gpd, ample capacity remains for some additional Master Plan development, particularly with implementation of planned water conservation measures and off-campus demand reductions (Table 3.14-10). With continued planned development, however, a capacity shortfall per the existing agreement would occur by 2035 unless the WRF is constructed and operational.

Table 3.14-10 Wastewater Generation Comparison from Cal Poly to the City through 2035

	Gallons Per Day				
	2015	2020	2025	2030	2035
Allowable Wastewater Flow to City					
Per Wastewater Flow Capacity Agreement	471,000	471,000	471,000	471,000	471,000
Wastewater Generation					
Baseline Flow	197,557	197,557	197,557	197,557	197,557
2035 Master Plan Capacity Requirement	0	0	114,433	192,759	290,411
Wastewater Treatment Flow Rate Reductions					
Conservation and Off-Campus Properties Demand Reductions	0	3,341	9,901	9,901	9,901
WRF[1]	0	0	169,621	339,242	339,242
Total Wastewater Generation					
Without WRF	197,557	194,216	302,089	380,415	478,067
With WRF	197,557	194,216	132,468	41,173	138,825
Adequate Wastewater Treatment Capacity Available?					
Without WRF	Yes	Yes	Yes	Yes	No
With WRF	Yes	Yes	Yes	Yes	Yes
Comparison of Wastewater Generation to Agreement					
Remaining Capacity under Agreement (Baseline + 2035 Master Plan Without WRF)	273,443	276,784	168,911	90,585	-7,067
Remaining Capacity under Agreement (Baseline + 2035 Master Plan With WRF)[1]	273,443	276,784	338,533	429,828	332,176

Note: WRF=water reclamation facility.

1. Assumes that Phase 1 of the WRF will be online in 2022 and Phase 2 will be completed in 2028

Source: Watearth 2019a

As shown in Table 3.14-10, adequate wastewater treatment capacity would be available to meet future demands if the WRF is operational as projected, with the first phase completed in 2022 and second phase completed in 2028. There is also adequate wastewater treatment capacity to meet future demand up through year 2030. However, without the capacity derived from reclaimed water production at the WRF, there would not be adequate treatment capacity at the City's WRRF at buildout in 2035. While general timing of WRF construction and operation are planned, specific timing, design, and other details of the WRF are not yet known. Therefore, it cannot be determined with certainty that wastewater capacity would be available to meet increased demand from implementation of the 2035 Master Plan.

Based on modeling of the City's wastewater collection system, peak wet weather flow (PWWF), peak dry weather flow (PDWF), and average dry weather flow (ADWF) were calculated. As noted above, measured peak flows between 2015 and 2017 from campus were substantially less than the City's modeled results. Measured daily PWWF from Cal Poly into the City's wastewater system varied between a high of 374,892 gpd in 2015 and 665,702 in 2017 (Veium, pers. comm., 2019). As a result, the modeled results represent a very conservative analysis. Table 3.14-11 provides a summary of modeled PWWF, PDWF, and ADWF, assuming the WRF is operational as planned.

Table 3.14-11 Modeled ADWF, PDWF, and PWWF from Cal Poly to the City's WRRF

Wastewater Flow Type	Flow (gpd)				
	2015	2020	2025	2030	2035
No WRF					
ADWF	284,482	279,671	435,007	547,797	688,415
PDWF	739,653	727,144	1,131,019	1,424,272	1,789,880
PWWF	2,308,597	2,296,088	2,699,963	2,993,216	3,358,824

Wastewater Flow Type	Flow (gpd)				
	2015	2020	2025	2030	2035
Operational WRF					
ADWF	284,482	279,671	265,386	208,555	349,173
PDWF	739,653	727,144	961,398	1,085,030	1,450,638
PWWF	2,308,597	2,296,088	2,530,342	2,653,974	3,019,582

Notes: gpd=gallons per day; ADWF=average dry weather flow; PDWF=peak dry weather flow; PWWF=peak wet weather flow; WRRF=Water Resource Recovery Facility; WRF=water reclamation facility.

Source: Watearth 2019b

Model results indicate that even with the WRF operational as planned, PWWF from Cal Poly to the City's wastewater collection systems would continue to exceed the 1.2 mgd of transmission capacity agreed to by the City and Cal Poly for all analysis years through 2035, including the 2015 baseline year (Watearth 2019b). While the WRF is likely to have additional peak capacity to accommodate higher than average annual flows, it may not be adequate to reduce PWWF to 1.2 mgd. In addition to anticipated wastewater treatment flow rate reductions actions, improvements to Cal Poly's wastewater collection system would be needed to reduce the potential for future wet months to exceed the 1.2-mgd conveyance capacity agreement between Cal Poly and the City. Because adequate wastewater transmission capacity is not available under the current agreement and the WRF would not have additional capacity to fully accommodate PWWF, the development of new facilities under the 2035 Master Plan could result in adverse environmental effects, this impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.14-4a: Initiate Operation of the WRF to Ensure That It Can Meet the Offset Demand Associated with Campus Growth

Implement Mitigation Measure 3.14-4a described above. If the initial phase of the WRF is not operational by 2022 or if other near-term 2035 Master Plan projects are constructed before operation of the first phase of the WRF, Cal Poly shall not initiate operation of any new facilities or developments until such time as the WRF is available for use, or unless Cal Poly can demonstrate that, notwithstanding delay in WRF operation, adequate wastewater capacity is available to serve the new development through contractual treatment rights at the City's WRRF and/or conservation or other flow reduction measures.

Mitigation Measure 3.14-4b: Implement Capital Improvement Projects to Reduce Wastewater Flows

Cal Poly, as part of its Utility Master Plan, shall include capital improvement projects that would reduce wastewater flows and implement such plans prior to the development of new facilities that have the potential to increase wastewater flows such that no net increase in wastewater flows above 2018/2019-academic-year levels will occur from Cal Poly to the city's infrastructure. Capital improvements shall include, but are not limited to, the following:

- implement inflow and infiltration (I/I) reduction projects, including the replacement of on campus wastewater transmission pipes and systems in order to reduce PWWF to 2018/2019 academic year levels or less. Note, the I/I projects, including wastewater transmission pipe replacement, are addressed as part of the overall 2035 Master Plan development program which includes up to 1 linear mile of annual pipeline infrastructure replacement.
- additional water conservation measures, such as additional water use restrictions and upgrades of existing fixtures for on-campus facilities.

Design and planning of improvements shall be completed in coordination with the City and in a compatible manner with the City's existing wastewater transmission and treatment network. Cal Poly shall not initiate operation of any new on-campus facilities that would increase wastewater flows as part of the 2035 Master Plan until Cal Poly completes upgrade projects to reduce PWWF and Cal Poly can demonstrate no increase in PWWF to the City compared to 2018/2019-academic-year levels or additional City wastewater transmission and treatment capacity becomes available for use by Cal Poly.

<u>Significance after Mitigation</u>
As shown in Table 3.14-10, operation of the WRF would reduce wastewater flows to the City compared to existing conditions and through 2035 conditions and ensure that adequate capacity is available for wastewater treatment (and in accordance with existing agreements with the City) to serve the project. Implementation of Mitigation Measures 3.14-4a and 3.14-4b would require Cal Poly to demonstrate adequate wastewater capacity is available to serve all Master Plan projects. In particular, Mitigation Measure 3.14-a requires Cal Poly to ensure adequate wastewater treatment capacity is available to serve 2035 Master Plan projects before operation through construction of the WRF, treatment at the City's WRRF (pursuant to contract treatment rights) and/or through conservation or other reduction measures. Mitigation Measure 3.14-4b requires Cal Poly to implement I/I reduction projects and enhanced conservation measures and establishes a performance standard that would prohibit Cal Poly from operating new on campus facilities that would increase PWWF until the upgrade projects are complete and Cal Poly can demonstrate no increase in PWWF compared to 2018/2019 levels (or additional City WRRF capacity becomes available to Cal Poly). Therefore, implementation of the 2035 Master Plan would not result in inadequate wastewater conveyance or treatment capacity, and impacts would be reduced to **less-than-significant** levels.

Impact 3.14-5: Generate Solid Waste in Excess of State or Local Standards or in Excess of the Capacity of Local Infrastructure or Otherwise Impair the Attainment of Solid Waste Reduction Goals or Requirements

Implementation of the 2035 Master Plan would increase solid waste generation at Cal Poly. However, adequate landfill capacity is available at local and regional landfills to accommodate additional solid waste generated by the project through the year 2035 (and beyond). Compliance with the Cal Poly Zero Waste Policy would continue to reduce landfill contributions, consistent with CIWMA, AB 341, SB 1374, AB 1826, and SB 1383. This impact would therefore be **less than significant**.

Implementation of the 2035 Master Plan would increase on-campus population levels through 2035. Assuming waste generation rates remain the same as baseline conditions (see "Analysis Methodology," above), annual municipal solid waste generation at Cal Poly would increase from an existing level of 3,647 tons per year to 4,741 tons per year in 2035 (Table 3.14-12), resulting in consumption of additional remaining capacity at receiving landfills.

Table 3.14-12 Existing and Project Solid Waste Generation under 2035 Master Plan

Waste Source	Waste Generation Factor	Waste Generation Pounds per Day	Waste Generation Tons per Year
Existing Waste Generation	N/A	19,984	3,647
Waste from Increased Student Body (0.77)	0.77 pounds/person/day	2,455	448
Waste from Increased Staff (5.29)	5.29 pounds /person/day	1,603	293
Waste from Increased Faculty (5.29)	5.29 pounds /person/day	1,936	353
Total Waste Generated in 2035		**25,978**	**4,741**

As discussed above under Section 3.14.2, "Existing Conditions," the majority of generated waste at Cal Poly is diverted from landfills through recycling, composting, and donating/reselling efforts. In 2016 and 2017, Cal Poly achieved waste diversion rates of 89 and 86 percent, respectively. In addition, and as noted above, Cal Poly has reduced per-capita disposal by 38 percent since 2006. Adherence to CSU sustainability policy and Cal Poly's Zero Waste Policy would effectively result in a decrease in the amount of solid waste disposed of at landfills in the short term, and no contribution to landfill volumes in the long term. Of note, compliance with the Cal Poly Zero Waste Policy would continue to reduce landfill contributions, consistent with CIWMA, AB 341, SB 1374, AB 1826, and SB 1383. In any case, as shown in Table 3.14-4, county landfills have substantial capacity and are projected to be available for waste disposal through the planning period (2035). Thus, the 2035 Master Plan would not substantially affect landfill capacity such that additional waste disposal facilities would be required. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required.