

3.17 UTILITIES AND SERVICE SYSTEMS

This section evaluates the adequacy of existing and planned utilities to serve the demands projected to result from campus development and growth with implementation of the 2021 LRDP. Specifically, this section addresses water supply, distribution, and treatment; wastewater treatment and disposal; relocation or construction of new or expanded utility facilities (e.g., electric power, natural gas, telecommunications, etc.); and solid waste disposal. Please refer to Section 3.6, "Energy," for an analysis of energy efficiency related to implementation of the project pursuant to State CEQA Guidelines, as amended in December 2018. Impacts related to stormwater collection and disposal are addressed in Section 3.10, "Hydrology and Water Quality."

Comments received in response to the NOP (See Appendix B) consisted of concerns related to the potential impacts of the campus's additional demand on water supplies and treatment and wastewater conveyance and treatment. Several comments were also received related to the City water service boundary. Additionally, concerns with the locations of new utility lines and the capacity levels of existing utility facilities and infrastructure were expressed.

3.17.1 Regulatory Setting

FEDERAL

Clean Water Act

The Clean Water Act (CWA) employs a variety of regulatory and non-regulatory 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 cities, storm water associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre, and mining operations and treated wastewater that is discharged to surface waters.

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 Green Building Standards Code

The State of California historically establishes progressive standards that serve as models for other states and even the federal government. With the adoption of the 2010 California Green Building Standards Code (CALGreen Code), California became the first state to incorporate green building strategies into its building code. The CalGreen Code comprises Part 11 of the California Buildings Standards Code in Title 24 of the California Code of Regulations.

CALGreen Code outlines mandatory and voluntary requirements for new residential and nonresidential buildings (e.g., retail, office, public schools, hospitals) throughout the state beginning on January 1, 2011.

The development and implementation of the CALGreen Code aims to (1) reduce GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to directives by the Governor. Pursuant to the California Global Warming Solutions Act of 2006 (AB 32), CALGreen Code provides strategies to reduce building-related sources of GHG to attain California's 2020 and 2050 goals.

In implementing a statewide baseline for green building strategies, California recognized the adverse effects of anthropogenic climate change. CALGreen Code serves as a tool for California to reduce GHG emissions and physical waste, increase energy efficiency, and achieve water conservation and water efficiency.

The standards included in the 2016 CALGreen Code became effective on January 1, 2017. The CALGreen Code was developed to enhance the design and construction of buildings, and the use of sustainable construction practices, through planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental air quality.

Chapter 5 (Division 5.3) of the 2016 CALGreen Code describes measures to reduce indoor demand for potable water and to reduce landscape water usage. Division 5.4 requires all construction contractors to reduce construction waste and demolition debris by 65 percent. Code requirements include preparing a construction waste management plan that identifies the materials to be diverted from disposal by efficient usage, recycling, reuse on the project, or salvage for future use or sale; determining whether materials will be sorted on-site or mixed; and identifying diversion facilities where the materials collected will be taken. In addition, CALGreen Code requires that 100 percent of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing be reused or recycled.

California Water Code, Water Supply

According to California Water Code (CWC) Section 10910 (referenced in CEQA Guidelines Section 15155), cities and counties acting as lead agencies 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 CEQA Guidelines Section 15155. This provision does not expressly apply to UC; however, as a matter of course, UC will address the required elements of this section.

California Water Code, Water Supply Wells and Groundwater Management

The CWC is enforced by 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.

Sustainable Groundwater Management Act of 2014

The Sustainable Groundwater Management Act of 2014 (SGMA)¹ became law on January 1, 2015, and applies to all groundwater basins in the state (Water Code Section 10720.3). By enacting the SGMA, the legislature intended to

¹ The SGMA is comprised of three separate bills: Senate Bill 1168, Senate Bill 1319, and Assembly Bill 1739. All three were signed into law by the Governor on September 16, 2014.

provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater within their jurisdiction (CWC Section 10720.1). The SGMA is a follow up to SB X7-6, adopted in November 2009, which mandated a statewide groundwater elevation monitoring program to track seasonal and long-term trends in groundwater elevations in California's groundwater basins. In accordance with this amendment to the CWC, DWR developed the California Statewide Groundwater Elevation Monitoring (CASGEM) program.

Pursuant to the SGMA, any local agency that has water supply, water management or land use responsibilities within a groundwater basin may elect to be a "groundwater sustainability agency" for that basin (CWC Section 10723). Local agencies were given until January 1, 2017 to elect to become or form a groundwater sustainability agency. In the event a basin is not within the management area of a groundwater sustainability agency, the county within which the basin is located is to be presumed to be the groundwater sustainability agency for the basin. However, the county may decline to serve in this capacity (CWC Section 19724).

The SGMA also requires DWR to categorize each groundwater basin in the state as high-, medium-, low-, or very low priority (CWC Sections 10720.7, 10722.4). All basins designated as high- or medium-priority basins must be managed by a groundwater sustainability agency under a groundwater sustainability plan that complies with Water Code Section 10727 et seq. If required to be prepared, groundwater sustainability plans must be prepared by January 31, 2020 for all high- and medium-priority basins that are subject to critical conditions of overdraft, as determined by DWR, or by January 31, 2022 for all other high- and medium-priority basins.

On December 15, 2014, DWR announced its official "initial prioritization" of the state's groundwater basins for purposes of complying with the SGMA, and this priority list became effective on January 1, 2015. The Soquel-Valley Groundwater Basin (Basin Number 3-01) was identified by DWR as one of 21 groundwater basins to be reclassified as critically overdrafted. In September 2015, the Soquel-Aptos Groundwater Management Committee was formed which includes representatives from the County of Santa Cruz, Central Water District, Soquel Creek Water District (SqCWD), the City of Santa Cruz, and private well owners. This group was superseded by the Santa Cruz Mid-County Groundwater Agency (MGA) in March of 2016, through a joint powers agreement to oversee management of the basin. The City of Santa Cruz receives a minor amount (5 percent) of drinking water from groundwater basins. The easterly area of the City is located within the Santa Cruz Mid-County Groundwater Basin, and the westerly area is within the West Santa Cruz Terrace Basin.

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. Water purveyors are required to select one of the four methods that the legislation defines for establishing a gallons-per-capita-per-day 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.

Assembly Bill 341

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.

Assembly Bill 827

AB 827, as approved in October 2019, requires businesses that either generates 4 cubic yards or more of commercial solid waste or 8 cubic yards or more of organic waste per week to provide accessible easily visible recycling receptacles clearly marked with educational signage next to all trash bins, except in restrooms.

Assembly Bill 1826

AB 1826 requires a business that generates 4 cubic yards or more of organic waste per week to arrange for recycling services for that organic waste in a specified manner. The bill would also require a business that generates 4 cubic yards or more of commercial solid waste per week, on and after January 1, 2019, to arrange for organic waste recycling services and, if CalRecycle makes a specified determination, would decrease that amount to 2 cubic yards, on or after January 1, 2020. The bill would require each jurisdiction to report to CalRecycle on its progress in implementing the organic waste recycling program, and CalRecycle would be required to review whether a jurisdiction is in compliance with this act.

AB 1826 would require CalRecycle to identify and recommend actions to address permitting and siting challenges and to encourage the continued viability of the state's organic waste processing and recycling infrastructure, in partnership with the California Environmental Protection Agency and /other specified State and regional agencies. The bill also would require the department to cooperate with local jurisdictions and industry to provide assistance for increasing the feasibility of organic waste recycling and to identify certain State financing mechanisms and State funding incentives and post this information on its Internet Web site.

Senate Bill 1335

Approved in September 2018, SB 1335 enacts the Sustainable Packaging for the State of California Act of 2018, which prohibits food service facilities from dispensing prepared food using food service packaging unless it is reusable, recyclable, or compostable.

Senate Bill 1374

SB 1374, Construction and Demolition Waste Materials Diversion Requirements, requires that jurisdictions summarize their progress realized in diverting construction and demolition waste from the waste stream in their annual AB 939 reports. SB 1374 required CalRecycle to adopt a model construction and demolition ordinance for voluntary implementation by local jurisdictions.

Senate Bill 1383

The California Global Warming Solutions Act of 2006 designates the California Air Resources Board (CARB) as the State agency charged with monitoring and regulating sources of emissions of greenhouse gases. SB 1383 requires CARB, no later than January 1, 2018, to approve and begin implementing that comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030, as specified. The bill also establishes specified targets for reducing organic waste in landfills.

SB 1383 requires CalRecycle, in consultation with CARB, to adopt regulations that achieve the specified targets for reducing organic waste in landfills. The bill authorizes local jurisdictions to charge and collect fees to recover the local jurisdiction's costs incurred in complying with the regulations. SB 1383 requires, no later than July 1, 2020, for CalRecycle, in consultation with CARB, to analyze the progress that the waste sector, state government, and local governments have made in achieving the specified targets for reducing organic waste in landfills. The bill authorizes CalRecycle, depending on the outcome of that analysis, to amend the regulations to include incentives or additional requirements, as specified. By adding to the duties of local governments related to organic waste in landfills, SB 1383 imposes a State-mandated local program.

UNIVERSITY OF CALIFORNIA

UC Santa Cruz and City of Santa Cruz Water Services Agreements

Under the terms of the 1962 Water Services Agreement between the City of Santa Cruz and UC Santa Cruz, the City agreed to provide sufficient water to meet the demands associated with the projected growth of the campus. The agreement also states that the City will provide, at no expense to UC Santa Cruz, water and sewer lines up to the boundaries of the main residential campus. An additional agreement made between UC Santa Cruz and the City in 1965 states that the City will install a water system capable of supplying 2 million gallons per day (mgd) to UC Santa Cruz for fire flow and ordinary use. Through these agreements, UC Santa Cruz has contracted for adequate water service for the entire campus. In 1998, UC Santa Cruz also executed a Memorandum of Understanding with the City of Santa Cruz under which UC Santa Cruz agreed to pay the cost of certain pump upgrades that could be needed in the future to serve the campus.

Most of the UC Santa Cruz main residential campus and the entire Westside Research Park are located within the boundary of the current City of Santa Cruz Water Department (SCWD) water service area. A portion of the UC Santa Cruz main residential campus, including some of the envisioned development areas identified in Chapter 2, "Project Description," is located outside the City limit, in unincorporated Santa Cruz County. Specifically, 2021 LRDP development areas in the northernmost part of campus and to the west of Empire Grade are outside the current service boundary. However, the 1962 and 1965 agreements do not restrict water service to areas within the City limits; to the contrary, they require the City to provide water to the entire campus, irrespective of its location. On March 20, 2020, as UC Santa Cruz began planning for the next LRDP, the Regents sent a letter to the City asking for confirmation of the City's commitments under the 1962 and 1965 Agreements to provide water to the entire campus. The City has not confirmed its obligations and has taken the position that it is only required to provide water to areas of the campus within the service boundary unless otherwise approved under state and local law. UC Santa Cruz does not believe that further compliance with state or local laws, including approval by the Local Agency Formation Commission (LAFCO), is required for the campus to receive increased service for the development of those portions of the campus that lie in unincorporated Santa Cruz County. Accordingly, in October 2020, UC Santa Cruz requested judicial intervention to seek clarity regarding the City's legal obligations. That action is currently pending and will likely be resolved in 2021.

UC Sustainable Practices Policy

The University of California has a system-wide policy regarding sustainability practices and performance goals and targets. The policy covers nine areas of operational sustainability, which include: Green Building Design, Clean Energy, Climate Protection, Sustainable Transportation, Sustainable Procurement, Sustainable Building and Laboratory Operations, Zero Waste, Sustainable Food Services, and Sustainable Water Systems. The UC Sustainable Practices Policy is frequently updated. The most recent changes were adopted in July 2020. The policy changes include updating the targets and inclusion of additional requirements to Climate Protection, Zero Waste, and Sustainable Food Services sections. In addition, a new General Sustainability Performance Assessment section was added, and minor revisions were made to clarify the intent and improve the readability of other policy sections.

The Zero Waste section calls for the following goals and practices:

- ▶ The University will achieve zero waste through prioritizing waste reduction in the following order: reduce, reuse, and then recycle and compost (or other forms of organic recycling) as described in section V.F.6 [of the UC Sustainable Practices Policy]. Minimum compliance for zero waste, at all locations other than health locations, is as follows:
 - Reduce per capita total municipal solid waste generation by:
 - 25% per capita from [Fiscal Year] FY2015/16 levels by 2025
 - 50% per capita from FY2015/16 levels by 2030
 - Divert 90% of municipal solid waste from the landfill
- ▶ The University supports the integration of waste, climate and other sustainability goals, including the reduction of embodied carbon in the supply chain through the promotion of a circular economy and the management of organic waste to promote atmospheric carbon reduction. In support of this goal, waste reporting will include tracking estimated Scope 3 greenhouse gas emissions.
- ▶ By 2020, the University will prohibit the sale, procurement, or distribution of packaging foam, such as food containers and packaging material, other than that utilized for laboratory supply or medical packaging and products. The University seeks to reduce, reuse, and find alternatives for packaging foam used for laboratory and medical packaging products.
 - No packaging foam or expanded polystyrene (EPS) shall be used in foodservice facilities for takeaway containers.
- ▶ The University is committed to the reduction and elimination of single-use items in line with the University's and the State of California's Zero Waste goals and in recognition of the severe environmental impact single-use products have globally. In recognition of this commitment, locations will reduce single-use products by taking the following actions:
 - Eliminate plastic bags in all retail and foodservice establishments in campus facilities or located on university owned land no later than January 1, 2021.
 - Replace disposable single-use plastic foodware accessory items in all foodservice facilities with reusables or locally compostable alternatives and provide only upon request no later than July 1, 2021.
 - Provide reusable foodware items for food consumed onsite at dine-in facilities and to-go facilities no later than July 1, 2022.
 - Replace single-use plastic foodware items with reusable or locally compostable alternatives at to-go facilities no later than July 1, 2022.
 - Phase out the procurement, sale and distribution of single-use plastic beverage bottles. Non-plastic alternatives shall be locally recyclable or compostable.
 - Foodservice facilities will provide alternatives no later than January 1, 2023.
 - Locations are encouraged to prioritize the installation of water refill stations to support the transition from single-use plastics to reusables.
 - Locations will consider eliminating single-use plastic beverage bottles when contracting with suppliers, or upon contract renewal and/or extension if current contract terms prohibit (e.g., vending machines, departmental purchases, etc.).
 - When selecting prepackaged, sealed food that is mass produced off premises and resold at University locations (e.g., grab-and-go items, such as chips, candy, prepackaged sandwiches, etc.), preference should be given in contract award and negotiations to suppliers that utilize locally compostable or locally recyclable packaging options.

This policy section also applies to third-party foodservice facilities that lease space or provide contracted services at UC locations. Locations will include these Policy provisions in lease language as new leases and contracts are negotiated or existing leases are renewed and work to incorporate these practices, as much as possible, within the timeframe of current leases. When procuring catering services, where possible, select providers that can provide alternatives to single-use plastics.

The Sustainable Water Systems section calls for the following goals and practices:

- ▶ Locations will reduce growth-adjusted potable water consumption 20% by 2020, and 36% by 2025, when compared to a three-year average baseline of FY2005/06, FY2006/07, and FY2007/08. Locations that achieve this target early are encouraged to set more stringent goals to further reduce potable water consumption. Each Campus shall strive to reduce potable water used for irrigation by converting to recycled water, implementing efficient irrigation systems, drought-tolerant planting selections, and/or by removing turf.
- ▶ Each location will develop and maintain a Water Action Plan that identifies long term strategies for achieving sustainable water systems. [...]
 - Campuses will include in this update quantification of total square feet of used turf and under-used turf areas on campus as well as a plan for phasing out un-used turf irrigated with potable water.
- ▶ Each location shall identify existing single-pass cooling systems and constant flow sterilizers and autoclaves in laboratories and develop a plan for replacement.
- ▶ New equipment requiring liquid cooling shall be connected to an existing recirculated building cooling water system, new local chiller vented to building exhaust or outdoors, or to the campus chilled water system through an intervening heat exchange system if available.
 - Once-through or single-pass cooling systems shall not be allowed for soft-plumbed systems using flexible tubing and quick connect fittings for short term research settings.
 - If no alternative to single-pass cooling exists, water flow must be automated and controlled to avoid water waste.

UC Santa Cruz Campus Sustainability Plan

The Campus Sustainability Plan 2017-2022 lays out UC Santa Cruz's sustainability goals for the period covered by the plan (2017-2022), and a new plan will be prepared covering the period beginning 2023. Recommendations made in the Campus Sustainability Plan are designed to facilitate the achievement of goals set forth in the UC Sustainability Policy. The Campus Sustainability Plan provides direction to development within four broad categories: Materials Management and Food Systems, Natural Environment and Infrastructure, Learning and Culture, and Climate and Energy. Goals and strategies specifically addressing water usage, solid waste recycling and waste management on the campus are detailed below.

The goals and strategies under Natural Environment & Infrastructure highlight the interrelated nature of campus lands and physical infrastructure and explores synergies related to the operational topics of Transportation, Land & Habitat Stewardship, Watershed & Stormwater, and Water Conservation.

GOAL 1: Conduct an assessment to address intersectional campus infrastructure needs that include and support sustainable transportation systems, reduce water consumption, manage stormwater, and steward campus natural and cultivated lands.

- ▶ **Strategy 1.1:** Develop a framework to define, identify and prioritize built and natural infrastructure improvement projects.
- ▶ **Strategy 1.2:** Measure effects of human activity on campus lands, watersheds, and infrastructure.
 - **Action 1.2.B & 5.1.B:** (new in 2019): Develop a campus land use management plan through the newly reconvened Campus Land Use and Management Action Committee (CLUMAC).

GOAL 2: Meet the UC Office of the President Sustainable Practices Policy goal to reduce potable water usage by 36 percent by weighted campus user by 2025 from a 2005-08 baseline.

- ▶ **Strategy 2.1:** Increase the use of non-potable water on campus.
 - **Action 2.1.C:** Explore feasibility of all potential non-potable water sources for the campus as part of the Long Range Development Planning process.
- ▶ **Strategy 2.2:** Reduce potable water use through technological innovations and physical improvements.
- ▶ **Strategy 2.3:** Improve communication about water management, use, and conservation to the campus and local community.
- ▶ **Strategy 2.4:** Identify new sources of funding for both potable water reduction and non-potable sourced development projects.
 - **Action 2.4.A:** Develop a life-cycle cost based funding model to account for potable water rate increases.

The goals and strategies under Material Management and Food Systems highlight of the environmentally preferred product purchases, address the UC Office of the President Sustainable Practices Policy goal of Zero Waste, and provide food security and access for the campus community. In 2018-2019, the campus started feeling the impacts of major shifts in the global recycling market for plastics. As a result, the campus experienced a significant increase in recyclable materials going directly to the landfill. To address this issue, additional Strategies and supporting Actions have been developed for 2019-2020 to support a strategic response to this issue.

GOAL 2: Achieve and maintain the UC Office of the President Sustainable Practices Policy goal of Zero Waste.

- ▶ **Strategy 2.1:** Improve operational infrastructure and business processes to increase waste diversion.
 - **Action 2.1.A:** Complete a compost/recycling collection and infrastructure rollout study that considers options for streamlining the waste stream across all collection areas.
- ▶ **Strategy 2.3:** Strive to increase the reuse of campus resources and disposable items that have not yet reached the end of their usable lifecycle.
 - **Action 2.3.B:** (New in 2019): Review current options and accessibility to reusable campus resources for students.
- ▶ **Strategy 2.4:** Develop effective waste reduction and Zero Waste education and training for students, staff and faculty.
 - **Action 2.4.C:** (new in 2019): Incorporate Zero Waste education into College Student Life curriculum development in 2020.
- ▶ **Strategy 2.5 & 1.5:** Advance the partial single-use bottled water ban and reduce the use of single-use plastics on campus.
 - **Action 2.5.A & 1.5.A:** Address barriers that event hosts face in switching from single-use plastics to more sustainable options.
 - **Action 2.5.B & 1.5.B:** (new in 2019): Pilot a durable/reusables program across Colleges, Housing and Educational Services (CHES) to reduce overall waste generation and limit bioware-based recycling contamination.
- ▶ **Strategy 2.6** (new in 2019): Improve operational infrastructure and business processes to reduce waste generation.
 - **Action 2.6.A:** Engage key departments and campus stakeholders in strategic procurement and reduction planning.
- ▶ **Strategy 2.7** (new in 2019): Improve campus waste and recycling contamination rates to levels acceptable to the City of Santa Cruz in order to facilitate proper processing of materials.

- **Action 2.7.A:** Engage the City of Santa Cruz Recycling and Waste Reduction team in regular audits of campus recycling loads.
- **Action 2.7.B:** Engage key departments and campus stakeholders in identifying, prioritizing, and implementing high impact measures to reduce recycling contamination.
- **Action 2.7.C:** Launch a campus-wide messaging campaign to spread awareness of the recycling contamination challenges and solutions.

UC Santa Cruz Water Action Plan

As required by the UC Sustainability Policy, UC Santa Cruz prepared a Water Action Plan (WAP) in December 2013, which was updated in December 2017. The 2017 WAP update reports that UC Santa Cruz has already exceeded the UC Sustainability Policy goal of a 20 percent reduction in water use per campus user by 2020 and marginally exceeded the goal of 36 percent water reduction by 2025 with 36.4 percent reduction from the FY2005/08 baseline. In response to a drought emergency declaration by the City of Santa Cruz in 2014, UC Santa Cruz consistently achieved a 22-28 percent monthly water use reduction from a 2012-13 peak season baseline and a 33 percent reduction from the target established in the City's 2009 Water Shortage Contingency Plan for UC Santa Cruz. During this time period, the campus saved 27.8 million gallons of water. The 2017 WAP identifies the following opportunities for additional reduction in potable water use on campus:

- ▶ Develop water reduction targets across campus, by type of use, to further water conservation practices and usage reduction in non-drought conditions;
- ▶ Evaluate the use of non-potable water sources for irrigation;
- ▶ Identify and prioritize sections of aging piping infrastructure that may have to be replaced to proactively prevent future leakage.
- ▶ Remove eligible turf irrigated by potable water; and
- ▶ Replace single-pass cooling systems, which draw large amounts of potable water.

LOCAL

As noted in Section 3.0.2, "University of California Autonomy," UC Santa Cruz, a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UC Santa Cruz that are in furtherance of the university's educational purposes. However, UC Santa Cruz may consider, for coordination purposes, aspects of local plans and policies of the communities surrounding the campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

Groundwater Sustainability Plans

The City of Santa Cruz relies on groundwater for 5 percent of its potable supply. The City of Santa Cruz participates in groundwater sustainability planning for two Groundwater Sustainability Agencies—the Santa Cruz Mid-County Groundwater Agency and the Santa Margarita Groundwater Agency.

The Santa Cruz Mid-County Groundwater Agency has prepared a Groundwater Sustainability Plan (GSP), which covers a broad area in Santa Cruz County, including the easterly area of the City of Santa Cruz. It describes the steps needed to eliminate the adverse effects of groundwater overdraft. Adverse effects include seawater intrusion, reduction in water quality, and a reduction in streamflow. Solutions include conservation, aquifer replenishment, winter water transfers, and, potentially, a desalination plant (in Moss Landing) (Santa Cruz Mid-County Groundwater Agency 2019).

The Santa Margarita GSP is currently in preparation, with a planned completion date of 2022 (Santa Margarita Groundwater Agency 2020).

County of Santa Cruz General Plan

The County General Plan contains the following objectives and policies related to utilities and service systems in the county and that may be relevant to the 2021 LRDP:

Objective 7.18b: Water Conservation.

- ▶ **Policy 7.18.3: Impacts of New Development of Water Purveyors.** Review all new development proposals to assess impacts on municipal water systems, County water districts, or small water systems. Require that either adequate service is available or that the proposed development provide for mitigation of its impacts as a condition of project approval.
- ▶ **Policy 7.18.4: Improvement of Water Systems.** Support water system improvement programs for storage, treatment, and distribution facilities to meet necessary water supply and fire suppression requirements.
- ▶ **Policy 7.18.6: Water Conservation Requirements.** Utilize the best available methods for water conservation in new developments. Work with all water purveyors to implement demand management programs and water conservation measures. In areas where shortage or groundwater overdraft has been substantiated by the water purveyor, require water conservation measures for new and existing uses. Require the use of water-saving devices such as ultra low-flow fixtures and native drought-resistant planting in new development projects to promote ongoing water conservation.
- ▶ **Policy 7.18.7: Water Reuse.** Encourage the use and recycling of water where feasible and where reuse will not have a negative impact on public health or the environment, including the use of greywater systems, and recycling of irrigation water for irrigation purposes as acceptable to Environmental Health Services, State Department of Health Services, and Regional Water Quality Control Board.

Objective 7.22: Wastewater Reclamation and Energy Conservation.

- ▶ **Policy 7.22.1: Wastewater Reclamation and Reuse Projects.** Support the reclamation and reuse of energy, water and nutrients in wastewater management, and give funding priority to reclamation and reuse projects in capital expenditures for wastewater management.
- ▶ **Policy 7.22.3: Use of Lower Energy Gravity Transfer Systems.** Where feasible, encourage sewage disposal systems in new development to utilize natural gravity flows to the maximum extent, reducing the energy costs associated with pumping.

Objective 7.24c: Materials Recovery and Source Reduction.

- ▶ **Policy 7.24.1: Materials Recovery.** Establish, in conformance with state law, materials recovery through recycling, reuse and composting, as the primary and fundamental strategy of solid waste management by the County, with landfill disposal as a secondary and essential component. Designate materials recovery and reuse projects as a funding priority in allocating capital expenditures for solid waste management.
- ▶ **Policy 7.24.8: Meeting State and Local Landfill Diversion Goals.** Consider mandatory recycling or material-specific landfill disposal prohibitions if state and local landfill diversion goals are not met through the use of voluntary programs.
- ▶ **Policy 7.24.10: Small Scale Recycling Collection Facilities.** Recognize small scale recycling collection facilities as a compatible accessory use in all land use designations, subject to appropriate zoning standards.
- ▶ **Policy 7.24.11: On-Site Yard Waste Composting.** Allow properly managed on-site yard waste composting for materials generated on-site in all land use designations. Provide support for on-site composting through education and technical assistance.
- ▶ **Policy 7.24.20: Materials Recovery and Processing Programs.** Materials recovery and processing programs shall include a public education and information component to ensure public awareness and understanding of program participation requirements, program objectives, and accomplishments and program costs and benefits.

Objective 7.25a: Refuse Collection.

- ▶ **Policy 7.25.1: Requiring Space for Refuse Collection.** Require all new projects, except single-family dwellings, to provide sufficient and accessible space for the storage and collection of refuse separate from, and in addition to, space for recyclable materials collection.

Objective 7.26: Electrical Distributing System.

- ▶ **Policy 7.26.8: Reusable Energy Sources.** Consider the development of municipal solar utilities or other financing mechanisms which increase public access to renewable energy sources and provide opportunities for small-scale decentralized local facilities and controls.

City of Santa Cruz General Plan

The City General Plan contains the following polices related to utilities and service systems in the city and that may be relevant to the 2021 LRDP:

- ▶ **Policy CC3.1:** Implement the City's Integrated Water Plan.
- ▶ **Policy CC3.3:** Safeguard existing surface and groundwater sources.
- ▶ **Policy CC3.4:** Maintain and improve the integrity of the water system.
- ▶ **Policy CC3.5:** Promote maximum water use efficiency.
- ▶ **Policy CC3.6:** Coordinate major land use planning decisions in all three jurisdictions served by the City water system based on water supply availability.
- ▶ **Policy CC3.7:** Allow extension of the Water Service Area only if an application is approved by city council and/or LAFCO.
- ▶ **Policy CC3.10:** Investigate new supply options to meet planned growth.
- ▶ **Policy CC3.11:** Conserve water resources. Cf. NRC1.3.1 and 3.1.
- ▶ **Policy CC4.3:** Explore the potential for recycling wastewater.
- ▶ **Policy CC6.1:** Lead the community in recycling and in reducing waste in an effort to achieve the goal of Zero Waste.
- ▶ **Policy CC6.2:** Provide convenient, economical, and efficient waste and recycling collection service.
- ▶ **Policy NRC7.4:** Promote energy-efficiency in the provision and use of water.

City of Santa Cruz Urban Water Management Plan

As a public water supplier, the City of Santa Cruz is required under State law to prepare and adopt an urban water management plan (UWMP) and to update it every five years. The 2015 plan was adopted by City Council at its August 23, 2016 meeting. The 2015 UWMP covers:

- ▶ A description of the City's water service area, including current and projected population through the year 2035 and other factors affecting water management planning,
- ▶ Existing and planned sources of water supply,
- ▶ Past, current, and projected water use,
- ▶ An assessment of forecasted water supplies and demands during normal, dry, and multiple dry water years to ensure water supply reliability,
- ▶ A description of measures to promote water conservation and efficient water use, and
- ▶ A summary of the City's water shortage contingency plan.

Data and analyses from the UWMP is included in the discussion below. The City is currently in the process of preparing a 2020 update to its UWMP.

3.17.2 Environmental Setting

WATER

Potable Water

The SCWD provides water to 95,251 customers through approximately 24,534 service connections in the City of Santa Cruz, the UC Santa Cruz campus, a portion of the unincorporated area of Santa Cruz County, and a small portion of the City of Capitola. The UC Santa Cruz main residential campus receives potable water through nine points of connection to the SCWD system (four locations each with two meters and a fifth location serving only the Barn Theater). SCWD pumps potable water to three consecutive in-line reservoirs at separate elevations ranging from 400 feet to 1,113 feet at a point in the north campus. The campus water system then distributes water to campus facilities in eight separate pressure zones.

Water Demand

Historically, the general trend in the City’s water demand was one in which water use rose roughly in parallel with account and population growth over time, except during two major drought periods in the late 1970s and the early 1990s. Around 2000, this pattern changed and system demand began a long period of decline, accelerated by pricing changes, drought, economic downturn, and other factors. In 2015, after two years of water rationing, annual water use fell to a level of about 2.45 billion gallons, similar to the level experienced during the 1970s drought (West Yost 2020:18). Table 3.17-1 shows the City’s existing and projected water demand. In 2015, the average daily demand was approximately 6,718 gpd.

Table 3.17-1 City of Santa Cruz Existing and Projected Water Demand, MGY

Use Type	2015	2020	2025	2030	2035
Single Family	835	1,277	1,223	1,191	1,170
Multi Family	538	772	714	690	678
Commercial	485	574	541	525	519
Industrial	43	56	59	60	61
UC Santa Cruz	160	196	234	271	308
Institutional/Governmental	35	46	42	40	40
Landscape (Dedicated Irrigation)	46	112	119	134	144
Landscape (Golf Irrigation)	87	58	52	47	47
Water Losses	223	236	241	247	253
Total	2,452	3,327	3,225	3,205	3,220

Notes: MGY = million gallons per year

Source: West Yost 2020:20

According to the City of Santa Cruz’s 2015 UWMP, UC Santa Cruz’s demand for potable water is projected to constitute 5.9 percent of the SCWD supply in 2020, 7.3 percent in 2025, and 9.6 percent in 2035 under business-as-usual consumption based on data leading up to 2015. The City of Santa Cruz’s 2015 UWMP also included water demands for UC Santa Cruz based on the university’s previously estimated demand of 349 MGY in 2035, which reflects the “high” projection for UC Santa Cruz (City of Santa Cruz 2015). The 308 MGY projection, as shown in Table 3.17-1, reflects the primary projection for UC Santa Cruz. The 349 MGY projection included the existing main residential campus water demand, the projected water demand estimated for the 2005 LRDP and 2008 Settlement Agreement, and existing and projected water demand for the Coastal Science Campus and the Westside Research Park (UC Santa Cruz 2017:10-11; West Yost 2020:1).

Water Supply

The SCWD currently has four water supply sources: 1) surface water diversions from three creeks and one natural spring on the Santa Cruz County North Coast; 2) surface water diversions from San Lorenzo River; 3) surface water from Loch Lomond Reservoir; 4) groundwater extracted from the Purisima Formation by the Live Oak well system. Ninety-five percent of SCWD's water supply comes from surface water sources. The main source of SCWD's water, the San Lorenzo River, makes up 55 percent of the supply. Other flowing sources include Majors Creek, Laguna Creek, and Liddel Spring, which account for 26 percent of supply. The only reservoir for the City of Santa Cruz is the Loch Lomond Reservoir, which holds 2.8 billion gallons; this accounts for 14 percent of supply. The remaining 5 percent is produced from the Live Oak wells (UC Santa Cruz 2017:10-11; West Yost 2020:22). Table 3.17-2 shows the City's existing and projected water supplies by supply source.

Table 3.17-2 City of Santa Cruz Existing and Projected Normal Year Water Supplies, MGY

Supply Source	2015	2020	2025	2030	2035
North Coast Surface Water Sources	382	637	642	671	671
San Lorenzo River	1,458	1,882	1,842	1,829	1,834
Loch Lomond Reservoir	495	595	551	540	547
Groundwater (Live Oak/Beltz Wells)	145	138	129	127	128
Total	2,480	3,252	3,164	3,167	3,180

Notes: MGY = million gallons per year

Source: West Yost 2020:10

Water Supply Constraints

The City of Santa Cruz is facing several obstacles in meeting its present and future water supply needs, all related to the limitation in where, when, and how much water is available, particularly during years when rainfall is below average (West Yost 2020:29-30).

- ▶ **Local Supply Variability:** The City water system draws almost exclusively on local surface water sources, whose yield varies from year to year depending on the amount of rainfall received during the winter season and generated runoff that provides beneficial inflows. This local variation has been a significant constraint in recent years as the Central Coast, and the State of California more generally, were held in the grip of a multi-year drought. The City's declaration of a Stage 3 Water Emergency in 2014 and 2015 underscores the effect of the drought on the City of Santa Cruz system.
- ▶ **Ecosystem Restoration and Protected Species:** Since 2002, the City of Santa Cruz has been working toward the development of a Habitat Conservation Plan that covers operation and maintenance activities at the North Coast streams and San Lorenzo River diversions as well as other activities which may result in "take" of threatened and/or endangered species. Adoption of the Habitat Conservation Plan would require that higher instream flows be maintained.
- ▶ **Source Water Quality and Treatment Capacity:** The primary issues with respect to water quality are the treatment challenges posed by future changes in the source water mix driven in part by ecosystem protection requirements. The Graham Hill Water Treatment Plant is a conventional surface water treatment plant that was commissioned in 1960 as a 12 mgd plant and has undergone an expansion and a number of improvements over the last 50 years. Except for groundwater from the Live Oak wells, all water delivered through the City system is treated at this plant.
- ▶ **The Water Rights Conformance Project for Water Rights and Entitlements:** The Newell Creek and San Lorenzo River permits to divert at Felton were originally granted as "diversion to storage," rather than as "direct diversion" rights. A diversion to storage is used when the water diverted is put into storage and is retained in storage for some time prior to being used. Current State Water Resources Control Board practice, however, requires rights of "direct diversion" as well as diversion to storage for the same operations as the City originally proposed and has historically undertaken.

Water Supply Augmentation Plan

In 2015, the City's Water Supply Advisory Committee made recommendations on how best to address an agreed-upon worst year gap of 1.2 billion gallons between water supply and water demand during times of extended drought. These recommendations included the following (West Yost 2020:33):

- ▶ **Element 0 Demand Management:** Additional water conservation with a goal of achieving an additional 200 to 250 million gallons per year of demand reduction by 2035 by expanding water conservation programs.
- ▶ **Element 1 In Lieu Recharge:** Passive recharge of regional aquifers by working to develop agreements for delivering surface water as an in lieu supply to the SqCWD and/or the Scotts Valley Water District (SVWD) so they can rest their wells, help the aquifers recover, and effectively store water for use by SCWD in drought years.
- ▶ **Element 2 ASR:** Active recharge of regional aquifers by using existing infrastructure and potential new infrastructure in the regionally shared Purisima aquifer in the Soquel-Aptos Basin and/or in the Santa Margarita/Lompico/Butano aquifers in Scotts Valley area to store water that can be available for use by the City in drought years.
- ▶ **Element 3 Advanced Treatment Recycled Water or Desalination:** A potable water supply using advanced-treated recycled water as its source as a supplemental or replacement supply in the event the groundwater storage strategies described above prove insufficient to meet the goals of cost-effectiveness, timeliness, or yield. In the event advanced-treated recycled water does not meet the City's needs, desalination would become Element 3.

Campus Infrastructure

The UC Santa Cruz main residential campus water system receives water through five connections to the City's water distribution system. Water is pumped from the City's Bay Street Reservoir to three consecutive inline reservoirs at different elevations. SCWD Reservoir No. 2 is at elevation 426 feet and supplies UC Santa Cruz's 1-inch Barn Theater connection. SCWD Reservoir No. 4 is at elevation 748 feet and supplies UC Santa Cruz's 6-inch Arboretum and 14-inch Heller Drive connections. SCWD Reservoir No. 5 is at elevation 982 feet and supplies UC Santa Cruz's 14-inch Cave Gulch connection. The Campus also has the ability to pump from SCWD Reservoir No. 5 to the UC Santa Cruz Emergency Water Storage Reservoir at elevation 1,113 feet through the 12-inch Pump Station connection. The campus water system has eight separate pressure zones isolated through 13 pressure-reducing stations. The UC Santa Cruz Emergency Water Storage Reservoir provides the campus with an emergency water supply in the event the City system is incapable of supplying water and ensuring adequate pressure and supply for fire flow. The reservoir is also necessary to provide adequate fire flow to the Crown/Merrill Apartments (UC Santa Cruz 2018:4.13-2).

In addition, as discussed in Section 3.10 (Hydrology and Water Quality), four test wells were installed in the late 1980's in the Jordan Gulch area of Campus to evaluate groundwater resources. A sustainable flow rate equal to approximately 48.6 MGY was produced with no discernible downstream effects. These wells have not been used for water supply since they were installed.

Recycled Water

Recycled water is not currently provided within the LRDP area. As part of the Student Housing West project, currently planned as part of the 2005 LRDP (and considered a cumulative project within the context of this EIR; refer to Chapter 4, "Cumulative Impacts" for further clarification), wastewater generated in new student housing on the Heller site will be collected and treated in a wastewater treatment facility that would be located in the southeastern portion of the Heller site. The facility would be a membrane bioreactor (MBR) plant to treat the wastewater and generate recycled water for irrigation and toilet flushing use on the Heller site and, potentially, at other areas of the main residential campus (West Yost 2020:12). An MBR plant is also planned for new family student housing that would be developed on the Hagar site as part of the Student Housing West project, which would provide recycled water for toilet flushing and irrigation use on that site.

In 2018, the City of Santa Cruz investigated the feasibility of a recycled water program through a regional Recycled Water Facilities Planning Study, funded in part by a grant from the State Water Board Division of Financial Assistance, Water Recycling Funding Program (City of Santa Cruz 2018). The Water Supply Advisory Committee agreed to water conservation measures and water supply reliability studies or non-recycled water elements to be in the Water Supply

Augmentation Plan, which are being further studied. The recommended projects and reuse opportunities include the following (West Yost 2020:26):

- ▶ Santa Cruz Public Works Department Title 22 Project: This project will implement a near-term non-potable reuse project to meet in-plant demands, develop a bulk water station and serve the nearby La Barranca Park and Neary Park.
- ▶ BayCycle Project: This project will expand Santa Cruz Public Works Department Title 22 Project to increase production and non-potable reuse to serve customers along Bay Street including UC Santa Cruz and other City customers.
- ▶ Coordination with Pure Water Soquel: The City will continue to work closely with SqCWD to support the evaluation of the Pure Water Soquel project, a water recycling/reuse to produce safe, high-quality drinking water. The project would replenish the Santa Cruz Mid-County Groundwater Basin with recycled water to increase the sustainability of groundwater supply.
- ▶ Groundwater Reuse Replenishment in Santa Cruz Mid County Basin: The City will explore groundwater reuse replenishment in the Santa Cruz Mid County Basin through a collaborative project with Pure Water Soquel or as an independent City-led project to replenish groundwater supplies with recycled water to enhance sustainable groundwater yields.
- ▶ Groundwater Reuse Replenishment in Santa Margarita Basin: The City will explore groundwater reuse replenishment with the use of recycled water in the Santa Margarita Basin through a regional project which has the potential to enhance groundwater supplies and make the region more resilient in the long term.

Water Use Trends

Per capita water demand at the main residential campus has dropped dramatically in recent years. Prior to 2009, annual water use on the main residential campus was about 200 MGY. Between 2010 and 2020, total water use peaked in 2013, when water use on the main residential campus was approximately 174 million gallons per year (MGY), and then dropped to 167 MGY in 2018 (see Table 3.17-3). The downward trend in water consumption has resulted from proactive water conservation, improved water use efficiency, and drought response measures on the campus. Much of the water conservation efforts were in response to the statewide drought from 2013 to 2017. During the 2014 and 2015 drought years, the City of Santa Cruz declared a Stage 3 Water Emergency and requested UC Santa Cruz to reduce domestic water use by 20 percent, as metered and billed by the City, compared to a 2013 baseline, which UC Santa Cruz accomplished (West Yost 2020:1).

Table 3.17-3 UC Santa Cruz Annual Water Usage (Main Residential Campus)

Calendar Year	Million Gallons Used	Campus Population	Gallons per Capita
2012	163.7	16,704	9,800.05
2013	173.7	16,752	10,368.91
2014	150.6	16,543	9,103.55
2015	155.9	17,276	9,024.08
2016	161.2	17,335	9,299.11
2017	160.4	18,063	8,880.03
2018	167.1	18,765	8,904.88

Source: City of Santa Cruz 2020a

As discussed above, under Section 3.17.1, "Regulatory Setting," campus-wide efforts to reduce water consumption have been on-going. These efforts include goals and practices under the Sustainable Water Systems section of the UC Sustainable Practices Policy, the Campus Sustainability Plan, and the Water Action Committee. UC Santa Cruz has been proactive in water conservation through infrastructural improvements, technological upgrades including leak detection and monitoring software, advanced evapotranspiration irrigation technology, and user conservation behavior including a successful coordinated campus drought response. As a result, campus potable water usage has followed a downward trend while campus population continues to increase.

In 2014, UC Santa Cruz allocated \$374,000 to water-saving projects, including installing time-allocated shower valves at the Recreation and Athletics Facility, retrofitting laboratory autoclaves with a water reuse modification system, adding sub-meters in unmetered irrigation areas, and installing a system to use seawater for marine mammal pool wash downs at the Coastal Science Campus. The Sustainability Office created a five-student Water Action and Drought Response Team to assist with UC Santa Cruz's response to the 2014 drought and meeting the City of Santa Cruz's mandatory water use reduction target of 20 percent. The team conducted a campus-wide audit of all state-funded restroom, kitchen and lab fixtures, posted educational signage to encourage the campus community to report leaks to the Work Order Desk as well as to reduce watering, assisted with the identification of campus sub-metering needs, engaged with users through tabling at campus events, and created tutorials for users to understand the new Beacon leak detection software portal (UC Santa Cruz 2017:21-22).

The University of California Board of Regents Sustainable Practices Policy on Sustainable Water Systems states that: "[campuses] will reduce growth-adjusted potable water consumption 20% by 2020 and 36% by 2025, when compared to a three-year average baseline of FY2005/06, FY2006/07, and FY2007/08." UC Santa Cruz's main residential campus average historical use over the UCOP designated three-year baseline, FY2005/06, 2006/07, and 2007/08, is 13,924 gallons per weighted campus user. In FY2016/17, the campus used 8,856 gallons per weighted campus user, reaching a 36.4 percent reduction from the baseline, surpassing the UC Office of the President's 2020 20 percent reduction and marginally exceeding the 2025 36 percent reduction goals (UC Santa Cruz 2017:5).

WASTEWATER

Wastewater produced on the main residential campus is conveyed via the campus sewer system to the City of Santa Cruz's system. The campus sewer system includes collector lines located in campus roadways and two major trunk lines. The two major trunk sewers on the main residential campus include one on Empire Grade and the second one along Jordan Gulch. Both combine into a single sewer at the Cook House, which discharges into the City's sewer system at Bay and High Streets. The wastewater is then transported through the sewer system to the City of Santa Cruz Wastewater Treatment Plant (WWTP), located near Neary Lagoon and Bay Street, where it is treated before being discharged to Monterey Bay. The City regulates what the campus can discharge to make sure it can properly treat it before discharging it to Monterey Bay. Additionally, campus wastewater is routinely monitored by UC Santa Cruz via an existing meter at the point of discharge to the City's sewer system and by the City to ensure that UC Santa Cruz complies with wastewater discharge limitations (UC Santa Cruz 2018:4.13-4).

The dry-weather flow capacity at the WWTP is 17 mgd. The average daily flow at the WWTP is less than 10 mgd (City of Santa Cruz 2020b). The LRDP area (main residential campus and Westside Research Park) generated a total of approximately 134 million gallons of wastewater in 2019, an average 367,123 gallons per day (UC Santa Cruz 2020).

SOLID WASTE

Waste Management and Disposal

The City of Santa Cruz Resource Recovery Facility (RRF) is approximately 2.5 miles southwest of the UC Santa Cruz main residential campus at 605 Dimeo Lane in Santa Cruz. The RRF is regulated at the federal, state, and local levels and includes the City of Santa Cruz landfill, recycling center, green waste drop-off area, and a Hazardous Waste Drop-off Facility. The RRF has a maximum permitted throughput of 535 tons per day. As of 2017, the landfill had a remaining capacity of 4,806,477 cubic yards (cy) and is not expected to reach capacity until 2058 (Cal Recycle 2020).

Campus Waste Collection and Recycling Services

UC Santa Cruz Grounds Services Department is responsible for overseeing the sorting and disposal of over 90 percent of waste generated on the campus. Trash is collected from mixed container bins, segregated recycling bins for mixed paper and white office paper, and cardboard located throughout the campus. Containers pass through a sorting line on the lower campus and are then hauled by Grounds Services to commercial recycling facilities and the City of Santa Cruz Resource Recovery Facility. Paper is transferred to large box bins and stored on the lower campus, where it is picked up by an outside vendor. Grounds Services collects cardboard and when the truck is full, hauls it to various off-campus

vendors. Trash is sent to the City of Santa Cruz Resource Recovery Facility. Compost from campus dining facilities is transported to Marina Landfill. Hazardous waste from the campus is managed by the Office of Environmental Health and Safety and properly processed off-campus at various facilities. Campus surplus collects electronic waste (E-waste) to be sold at the surplus store or to be disposed of at ECS Refining (UC Santa Cruz 2018:4.13-5; Nelson 2020)

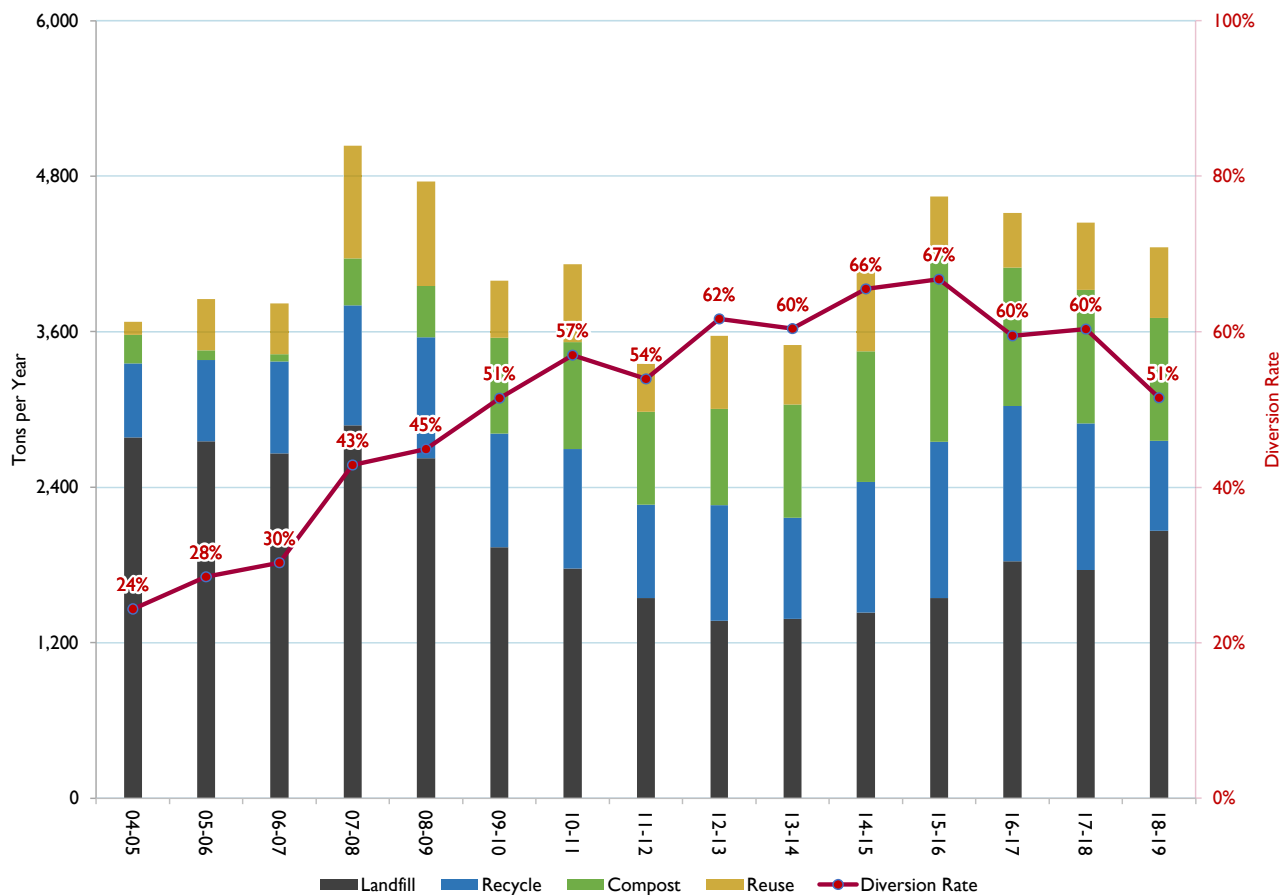
In FY2010/11, UC Santa Cruz hauled 1,722 tons of trash to the landfill, a significant decrease from 2,740-ton annual average of landfill waste from 2005-2009. By FY2015/16, UC Santa Cruz was sending 160 pounds of solid waste per capita per year to the landfill and diverting about 66 percent of solid waste generated (UC Santa Cruz 2018:4.13-5,6). As shown in Figure 3.17-1, in FYs 2016/17 and 2017/18 the diversion rate dropped to 60 percent and in FY2018/19 dropped again to 51 percent. Table 3.17-4 describes existing waste generated at UC Santa Cruz during the 2018/19 fiscal year that was disposed of at the RRF. With a total on-campus population of 22,300 (2018-2019 academic year), this is approximated 185 pounds of solid waste per capita per year to the landfill.

Table 3.17-4 Existing UC Santa Cruz Solid Waste Generation

Waste Type ¹	Existing (tons per year)
Total Municipal Solid Waste Generated	4,251
Municipal Solid Waste Diverted from Landfill	2,189
Municipal Solid Waste Landfilled at City of Santa Cruz Resource Recovery Facility	2,062

¹ Excludes construction and demolition waste, landscape organics, and agricultural waste, which are all considered non-standard municipal solid waste in the UC Sustainable Practices Policy. The campus handles these waste streams through recycling, composting, or other means of landfill diversion.

Source: UC Santa Cruz 2020



Source: Data provided by UC Santa Cruz in 2020.

Figure 3.17-1 Historical Waste Tonnage and Landfill Diversion Rate

ENERGY FACILITIES AND SERVICES

Pacific Gas and Electric (PG&E) provides most of electricity to the UC Santa Cruz campus. The PG&E point of service connection is the Slug Substation, located northeast of the Hagar Court employee housing complex. From there, the electricity at 21 kilovolts (kV) is routed to the Merrill Substation in the northeastern quadrant of the campus, where two transformers reduce the voltage to 12 kV. There are four campus electrical feeders that distribute power from Slugs sub along Steinhart to the cogeneration plant. Most of the campus buildings are distributed power via only two feeders. Lower campus buildings, Family Student Housing, and employee housing complexes receive power from a separate PG&E connections. Some of the electricity utilized at UC Santa Cruz is produced on campus by the cogeneration plant, located in the Central Heat Plant area of campus. The plant provides backup for emergency responders, safety systems, and research equipment, as well as supplements the electricity purchased from PG&E. The electric power generated by the turbine is fed into the campus' 12 kV distribution systems. This auxiliary electricity is especially useful when PG&E power failures occur (UC Santa Cruz 2018:4.13-1,2). A solar panel array, located on top of McHenry Library, also generates electricity on the main residential campus. UC Santa Cruz is also in the process of installing the aforementioned, on-site (2.1 MW) solar array above the East Remote parking lot. Refer to Section 3.6, "Energy" for further information regarding future solar facilities within the LRDP area.

UC Santa Cruz currently uses natural gas to run the cogeneration plant and two affiliated natural gas compressors, producing electricity and heating for water and buildings. The two compressors increase the pressure of the fuel gas to maximize combustion efficiency. Natural gas is purchased by UC Santa Cruz from PG&E and delivered via a high-pressure transmission line that runs along the railroad tracks south of Mission Street. A distribution line running along Western Drive delivers the gas to the PG&E point of connection, located at a master gas metering station at High Street. From the point of connection, gas is delivered to the cogeneration plant via an 8-inch line that runs on the west side of the campus to the cogeneration plant (UC Santa Cruz 2018:4.14-3). There are also numerous low-pressure distribution lines that provide natural gas service to various on-campus facilities, including housing, throughout the LRDP area.

With respect to transportation fuels, UC Santa Cruz operates a self-service fueling facility offering unleaded gasoline, biodiesel, and compressed natural gas for the 700 University-owned and operated fleet vehicles (UC Santa Cruz 2018:4.14-3).

3.17.3 Environmental Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

Based on Appendix G of the State CEQA Guidelines, the project would result in a potentially significant impact on utilities and service systems if it 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 adequate 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
- ▶ comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

ANALYSIS METHODOLOGY

Impacts on utilities that would result from implementation of the 2021 LRDP were identified by comparing existing and projected service capacity against future demand associated with project implementation. As noted above and in Chapter 2, "Project Description," UC Santa Cruz is anticipating on-campus improvements for water, wastewater, natural gas, and electricity as part of the 2021 LRDP. These improvements, both in terms of scope and location, were considered in the impact analysis provided below and throughout this EIR. When possible, a quantitative comparison was used to determine impacts of the project on future demands. Details related to methodology are provided below.

Water

Campus Water Demand

Information in this section is based on the *UC Santa Cruz Long Range Development Plan Water Demand Projections Technical Memorandum* prepared by Sherwood Engineers (included as part of Appendix J of this EIR). The following tables depict existing water demand and existing plus project demand, by residential and non-residential uses.

Table 3.17-5 provides demand factors used to forecast domestic (potable) water demands for non-residential buildings. The demand factor (gpd/FTE) was calculated by dividing the total water demand for non-residential buildings by the sum of student and employee full-time equivalents (FTEs). The unit demand factor was then applied to the anticipated development under the 2021 LRDP to estimate the future campus water use based on the growth in the campus population. Water use is conservatively projected linearly with growth (i.e., unit demand factors remain constant), which does not account for reductions that might result from efficiency retrofits to existing buildings or improved efficiency in new buildings.

Table 3.17-5 Non-Residential Buildings, Existing and Existing Plus Project Demand

Category	Annual Demand (MGY) (FY 17/18)	Average Daily Demand (gpd) (FY 17/18)	Existing FTE (FY 17/18)	Demand Factor (gpd/FTE)	Proposed (Existing Plus Project) FTE Projected 2040	Annual Total Demand (MGY) Projected 2040	Average Daily Total Demand (gpd) Projected 2040	Net Increase in Annual Demand (MGY) 2040	Net Increase in Average Daily Demand (gpd) 2040
Main Residential Campus (Non-Residential Uses) ^{1,2}	28.5	78,195	21,318	3.668 ⁴	33,000	44.2	121,045	15.7	42,850
2300 Delaware ³	0.5	1,463	—	—	—	0.5	1,463	—	—
Total	29.1	79,658	21,318	—	33,000	44.7	122,508	15.7	42,850

Notes: MGY = million gallons per year gpd = gallons per day

¹ Projected water demands are scaled linearly based on increase in student and employee FTEs.

² Non-residential includes the following categories from the 2021 LRDP: Classroom, Teaching Lab, Academic Student Support, Research, Offices, Library, Student Support/Health & Wellness, Athletics, Community Amenities, and Miscellaneous.

³ Demand at existing Westside Research Park research building assumed to remain constant.

⁴ Total campus demand, including visitors and non-UC employees, is reflected in the demand factor as it is based on the total average daily demand of UC Santa Cruz.

Source: Sherwood 2020:Table 4

Table 3.17-6 provides demand factors used to forecast domestic (potable) water demands for student and employee residential buildings. Unit demand factors for student and employee housing were derived by dividing daily water use by the number of beds/residents for each category. Employee housing assumes an average 2.43 residents per unit (1.43 dependents for each employee). As with the non-residential category, projections conservatively assume no reduction in unit demand for future conditions.

Table 3.17-6 Residential Existing and Existing Plus Project Demand

Category	Annual Demand (MGY) (FY 17/18)	Average Daily Demand (gpd) (FY 17/18)	Existing Beds/Residents	Demand Factor (gpd/bed)	(Existing Plus Project) Beds/Residents	Annual Total Demand (MGY) Projected 2040	Average Daily Total Demand (gpd) Projected 2040	Net Increase in Annual Demand (MGY) 2040	Net Increase in Average Daily Demand (gpd) 2040
Student Housing	68.3	187,241	9,283	20.2	19,958	146.9	402,560	78.5	214,996
Employee Housing Main Residential Campus	6.8	18,672	656	28.5	1,621	16.8	46,145	11.4	31,274
Employee Housing Westside Research Park	-	-	-	28.5	486	5.0	13,831	5.7	15,645
Total	75.2	205,913	9,939	-	22,065	168.8	462,535	94	256,623

Notes: MGY = million gallons per year; gpd = gallons per day

Source: Sherwood 2020:Table 5

Table 3.17-7 provides irrigation demand projections; Irrigation demand projection methods vary by category:

- ▶ Grounds irrigation is assumed to increase by 50 percent to accommodate the planned colleges and academic infill (corresponding roughly to the ratio of future to existing FTE students and employees).
- ▶ Employee housing irrigation increases by the percent increase in total employee beds (251 percent increase).
- ▶ Farm and garden irrigation are assumed to increase by 25 percent.
- ▶ Arboretum irrigation is assumed to increase by 25 percent to allow for increasing post-drought irrigation.
- ▶ Athletic Fields (Recreation and Sand Field) are assumed to remain constant.
- ▶ Minor categories (Green House and “Non-Grounds” Landscape) are assumed to remain constant.

Table 3.17-7 Irrigation Existing and Existing Plus Project Demand

Category	Annual Demand (MGY) (FY 17/18)	Average Daily Demand (gpd) (FY 17/18)	Increase in Irrigation Demand (%) Projected 2040	Annual Total Demand (MGY) Projected 2040	Average Daily Total Demand (gpd) Projected 2040	Net Increase in Annual Demand (MGY) 2040	Net Increase in Average Daily Demand (gpd) 2040
Grounds							
Grounds Landscape ¹	16.0	43,937	50%	24.1	65,906	8.1	21,969
Recreation Field	8.7	23,905	(None)	8.7	23,905	0	0
Sand Field	4.7	12,798	(None)	4.7	12,798	0	0
Subtotal	29.4	80,640	(None)	37.5	102,609	8.1	21,969
Non-Grounds							
Arboretum ²	5.0	13,828	25%	6.3	17,285	1.3	3,457
Employee Housing Irrigation	2.4	6,489	251%	7.6	20,839	5.2	14,350
Farm Irrigation ²	4.6	12,502	25%	5.7	15,627	1.1	3,125
Garden ²	1.6	4,376	25%	2.0	5,470	0.4	1,094
Greenhouse	0.0	62	(None)	0.0	62	0	0
“Non-grounds” Landscape	0.4	1,226	(None)	0.4	1,226	0	0
Subtotal	14.0	38,483	(None)	22.8	62,468	8.1	22,027
Total	43.5	119,123	(None)	59.5	163,118	16	43,995

Notes: MGY = million gallons per year; gpd = gallons per day

¹ Grounds landscape projected increase is 50% based on proposed development of two new colleges.

² Arboretum, Farm and Garden demands assumed to increase by 25% to allow for increased irrigation in post-drought years based on conversations with UC Santa Cruz.

Source: Sherwood 2020:Table 6

Table 3.17-8 provides demand projections from mechanical systems. Limited expansion of the existing central cooling system is anticipated, with approximately 10 new buildings within the academic core proposed to connect to the system based on their proximity to the cooling tower loop and amount of excess cooling tower capacity. The anticipated increase in cooling tower make-up water demand is projected by linearly scaling the existing make-up water use by the increase in building area to be served by the centralized cooling systems.

Table 3.17-8 Mechanical Existing and Existing Plus Project Demand

Category	Existing Building Area Served by Cooling Towers (sf) (FY 17/18)	Annual Demand (MGY) (FY 17/18)	Average Daily Demand (gpd) (FY 17/18)	Future Building Area Served by Cooling Towers (sf) Projected 2040	Increase in Area	Annual Total Demand (MGY) Projected 2040	Average Daily Total Demand (gpd) Projected 2040	Net Increase in Annual Demand (MGY) 2040	Net Increase in Average Daily Demand (gpd) 2040
Mechanical	1,005,960	6.8	18,763	2,357,784	234%	16.1	43,977	9.3	25,214

Notes: sf = square feet; MGY = million gallons per year; gpd = gallons per day

Source: Sherwood 2020:Table 7

Table 3.17-9 provides a summary the existing and projected potable water demand by water use category and by campus area.

Table 3.17-9 Existing and Projected Water Demand

Water User Category	Existing (FY 17/18) Annual Demand MGY	Existing (FY 17/18) Average Daily Demand gpd	Projected 2040 Annual Demand MGY	Projected 2040 Average Daily Demand gpd	Net Increase in Annual Demand (MGY) 2040	Net Increase in Average Daily Demand (gpd) 2040
Demand by Water Use Category						
Interior Water Demands						
Non-Residential	29.1	79,658	44.7	122,508	15.6	42,850
Residential	75.2	205,913	168.8	462,535	93.6	256,622
Mechanical	6.8	18,763	16.1	43,977	9.3	25,214
Irrigation						
Grounds	29.4	80,640	37.5	102,609	8.1	21,969
Non-Grounds	14.0	38,483	22.8	62,468	8.8	23,985
Total	154.5	423,457	289.1	792,121	134.6	368,664
Demand by Campus Area						
Main Residential Campus	154.0	421,994	283.5	776,827	129.5	354,833
Westside Research Park	0.5	1,463	5.6	15,294	5.1	13,831
Total	154.5	423,457	289.1	792,121	134.6	368,664

Notes: MGY = million gallons per year; gpd = gallons per day

Source: West Yost 2020:10

Wastewater

To forecast future wastewater generation, annual wastewater generation was projected with consideration of 2040-2041 population levels under the 2021 LRDP, and the projected volume of wastewater was compared to available capacity of the City of Santa Cruz WWTP.

In 2019, the campus generated a total of approximately 134 million gallons of wastewater or 367,123 gpd (UC Santa Cruz 2020). With a 2018-2019 campus population of 22,300, this is equivalent to approximately 6,009 gallons per capita annually and 16.5 gpd. In 2040-2041, the projected campus population of 35,230 persons would generate approximately 212 million gallons annually and 581,295 gpd.

Solid Waste

This analysis considers a reasonable worst-case scenario, which assumes that UC Santa Cruz does not meet the policy goal of reducing waste per capita by 50 percent by 2030 or diverting 90 percent of municipal waste from the landfill. Waste generation rate used to estimate future waste generation at UC Santa Cruz is based on FY2018/19 data (approximately 0.19 tons per campus user per year). This rate is intended to reflect a business-as-usual projection and does not factor in waste reduction achieved through additional campus conservation and waste diversion programs.

ISSUES NOT EVALUATED FURTHER

As stated previously, Impacts related to stormwater collection and disposal are addressed in Section 3.10, "Hydrology and Water Quality." All other issues applicable to utilities and service systems listed under the significance criteria above are addressed in this section.

IMPACTS AND MITIGATION MEASURES

Impact 3.17-1: Impacts on Water Supply

Implementation of the 2021 LRDP would generate an additional demand for water; while there would be adequate water supply from the City's existing water sources in normal water years, during single and multiple dry water year conditions, there would be a substantial gap between demand and available supplies, which would require the City to secure a new water source. This impact would be **significant**.

The analysis below considers several issues. First, the analysis considers whether there is sufficient supply to serve the project during normal and multiple dry years. Because the analysis demonstrates there may be a potential shortage, the analysis explores alternative water supplies if supplies are insufficient, their likelihood of occurrence, and their associated environmental impacts, if procured. Finally, the analysis determines environmental impacts that may occur if development under the 2021 LRDP must be curtailed because sufficient water does not materialize or if water is not supplied by the SCWD to the area outside the current SCWD service area.

The analysis does not consider the use of additional recycled water as part of the 2021 LRDP, which could otherwise reduce total water use as recycled water would replace potable water, as appropriate. Although a wastewater treatment plant is planned as part of the Student Housing West (cumulative), which is a planned-but-not-operational project considered under the 2005 LRDP, these treatment plants are expensive to construct and operate. They also require consideration of several operational issues, such as storage of treated wastewater during non-irrigation seasons or whether this treated effluent will be discharged offsite, the location of such a facility, which can produce odors, and other potential locational constraints due to its size and compatibility of land uses. While it is possible that such a plant could be constructed as part of a housing project under the 2021 LRDP (subject to additional planning and CEQA review), it is not assumed in the analysis of supply.

Sufficiency of Supply

With implementation of the 2021 LRDP, on-campus population (faculty and staff) would increase, which would result in an increase in demand for potable water. In addition, demand for utility water is anticipated to increase with additional landscaping and mechanical needs. The City of Santa Cruz's 2015 UWMP included water demands for UC Santa Cruz based on UC Santa Cruz's previously estimated demand of 308 MGY in 2035, which generally applied an additional 37 MGY per 5-year period after 2020.² Based on the analysis in this EIR, the projected potable water demand associated with the development under the proposed 2021 LRDP is approximately 289 MGY (see Table 3.17-9). If the projected water demand under the proposed 2021 LRDP (existing plus project total of 289 MGY) is combined with the projected water demand for the Coastal Science Campus, the total water demand for UC Santa Cruz is estimated at 307 MGY by

² 308 MGY is the "primary" projection of UC Santa Cruz water demand in 2035 within the City's 2015 UWMP. It is based on a total UC Santa Cruz projection of 349 MGY (which includes the Coastal Science Campus). Due to the inclusion of the Coastal Science Campus as part of the overall water demand of UC Santa Cruz within the City's UWMP, it is included as part of this discussion.

2040, which is considerably lower (12 percent lower) than an extrapolated 2040 demand of 349 MGY, based on the City's 2015 UWMP. Compared to existing conditions, the 2021 LRDP would increase demand by an estimated 137.5 MGY. As discussed above under Section 3.17.2, "Environmental Setting," the Santa Cruz water system relies predominantly on local surface water supplies, which include the North Coast sources, the San Lorenzo River, and Loch Lomond Reservoir. The system relies entirely on rainfall, surface runoff, and groundwater infiltration occurring within watersheds located in Santa Cruz County. Although the City of Santa Cruz has not previously seen shortages in normal water years, by adding the ecosystem protection conditions under the City's contemplated Habitat Conservation Plan, a small shortage (1 to 3 percent) can be reasonably expected in future normal years. The City predicts the supply and demand volumes to be in balance for 90 percent of all normal water years for 2020-2035.

The City's single-dry water year assessment in their 2015 UWMP was based on the water supply available to the City comparable to water year 2014, which was a recent critically dry year. Based on these supply assumptions, water supply during a single-dry water year is not sufficient to meet the demand in the near-term, although the shortage experienced is projected to decrease over time. During a single-dry water year, annual shortages of 16 to 21 percent are projected.

The 2015 UWMP modeled the estimated water supply that would be available during a multiple-dry water year event using hydrology from a three-year drought sequence of 1976, 1977, and a second 1977 year. In an extreme multi-year drought similar to the 1976-77 event, the estimated water supply available to the City in the first year of that event ranges between 2,430 and 2,377 MGY or an average of 25 percent less water on an annual basis than is available in a normal water year. During the second year, the average shortage over time increases to 39 percent and in the third year modeled, the average shortage compared to a normal year is over 50 percent. Table 3.17-10 shows the City's supply and demand, for normal, single dry, and multiple dry years.

Table 3.17-10 City of Santa Cruz Water Supply and Demand in Normal Years, Single Dry Years and Multiple Dry Years, MGY

	2020	2025	2030	2035
Normal Year				
Supply Totals	3,252	3,164	3,167	3,180
Demand Totals	3,327	3,225	3,205	3,220
Difference	(75)	(61)	(38)	(40)
Demand Served, %	97%	97%	98%	98%
Single Dry Year				
Supply Totals	2,619	2,658	2,692	2,692
Demand Totals	3,327	3,225	3,205	3,220
Difference	(708)	(567)	(513)	(528)
Demand Served, %	79%	82%	84%	84%
Multiple Dry Year				
<i>First Year</i>				
Supply Totals	2,430	2,377	2,377	2,381
Demand Totals	3,327	3,225	3,205	3,220
Difference	(897)	(848)	(828)	(839)
Demand Served, %	73%	74%	74%	74%
<i>Second Year</i>				
Supply Totals	1,918	1,942	1,968	1,969
Demand Totals	3,327	3,225	3,205	3,220
Difference	(1,409)	(1,283)	(1,237)	(1,251)
Demand Served, %	58%	60%	61%	61%

	2020	2025	2030	2035
<i>Third Year</i>				
Supply Totals	1,597	1,567	1,580	1,581
Demand Totals	3,327	3,225	3,205	3,220
Difference	(1,730)	(1,658)	(1,625)	(1,639)
Demand Served, %	48%	48%	49%	49%

Notes: MGY = million gallons per year

Source: West Yost 2020:32

As a City water customer, UC Santa Cruz is subject to these potential water shortages and to the City’s water supply allocation system and demand reduction measures. The City’s Water Shortage Contingency Plan has a five-stage plan which includes a set of demand reduction measures that become progressively more stringent as the shortage condition escalates. The City’s Water Shortage Contingency Plan includes reduction goals for UC Santa Cruz under each shortage scenario. These goals were developed in consultation with UC Santa Cruz. As previously described, UC Santa Cruz has been very successful in reducing water use in recent years through infrastructural improvements, technological upgrades including leak detection and monitoring software, advanced evapotranspiration irrigation technology, and user conservation behavior, including a successful coordinated campus drought response. UC Santa Cruz successfully met the 2014 City’s mandatory water reduction goals as a result of this proactive water conservation.

Therefore, while the water demand of the campus under the proposed 2021 LRDP (289 MGY) would be less than demand included in the 2015 UWMP, and there would generally be adequate water supply from the City’s existing water sources in normal water years with small shortfalls during normal and single dry years met through conservation. During multiple dry water year conditions, there would be a substantial gap between demand and available supply, up to 1,730 MGY as shown in Table 3.17-10. This gap would not be fully addressed through conservation and would require the City to secure a new water source. UC Santa Cruz’s water demand under the 2021 LRDP would contribute to the need for the City to secure a new water supply source to address the shortfall under multiple dry water year conditions. This would be a significant impact.

In addition, as noted in Chapter 2, “Project Description,” there is currently a dispute over whether UC Santa Cruz is legally entitled to water service to portions of the 2021 LRDP that are outside the City’s current water service area. UC Santa Cruz and the City have existing agreements in place dating back to the inception of the campus that require the City to provide water service to the entire main residential campus, including areas outside the City’s designated water service area boundary. Under the 2021 LRDP, some development is planned in the north campus outside of the City’s designated service boundary. The main residential campus already includes development above the water service area boundary, including portions of Colleges 9 and 10 (built in 2002) and apartments associated with Crown and Merrill Colleges (built in 1968), as well as water infrastructure that serves the campus. These areas are currently served with City-provided water supplies. However, to date, the City has not affirmed its contractual obligation to provide water service to the portions of the campus outside the boundary, creating uncertainty regarding whether the City will provide water to those areas. Accordingly, UC Santa Cruz initiated litigation in order to obtain a final judicial resolution of the parties’ respective rights under the water service agreements. UC Santa Cruz anticipates that the court will affirm the City’s legal obligation to serve water to the entire campus, including areas outside the current service boundary. However, to account for the possibility, however remote, that the court finds otherwise, this EIR evaluates what would occur if UC Santa Cruz is deemed not to have a legal right to water service outside the current service boundary, specifically (1) what alternative water sources could serve those areas of campus; (2) the likelihood that such alternative sources could be secured; (3) how 2021 LRDP development would be altered or curtailed if no water source is secured to serve the areas outside the current service boundary; and (4) the environmental impacts of that curtailed LRDP project. This is discussed further, after the evaluation of alternative sources of water supply.

Evaluation of Potential Alternative Water Supplies

As described above in "Water Supply Augmentation Plan," under Section 3.17.2, "Environmental Setting," the City Water Supply Advisory Committee, in response to projected water supply shortages during certain normal year conditions, single-dry year conditions, and multiple-dry year conditions, issued a Water Supply Augmentation Plan that included several measures (Elements 0 through 3) that could be implemented to provide more reliable water supplies to the City and its customers, including UC Santa Cruz. These included the implementation of additional water conservation measures to achieve a 25 percent reduction in potable water demand by 2035, passive recharge of regional aquifers, active recharge of regional aquifers, advanced treatment of stormwater/wastewater, and desalination. Currently, the City is evaluating the feasibility of these three water supply options.

As part of its evaluation of the water supply options, in 2018 the City of Santa Cruz completed a feasibility/planning study of recycled water recycling facilities, including an advanced water treatment facility adjacent to the City's existing wastewater treatment plant. This study, the Regional Recycled Water Facilities Planning Study, was funded in part by a grant from the State Water Board Division of Financial Assistance, Water Recycling Funding Program (City of Santa Cruz 2018). The study identified the following recommended projects and reuse opportunities: 1) the Santa Cruz Public Works Department Title 22 Project; 2) the BayCycle Project; 3) Coordination with Pure Water Soquel; 4) Groundwater Reuse Replenishment in Santa Cruz Mid County Basin; and 5) Groundwater Reuse Replenishment in Santa Margarita Basin.

Potential Environmental Impacts Associated with the Title 22 Project and BayCycle Project

The Title 22 Project would involve construction of treatment and storage facilities at the existing WWTP to treat effluent to Title 22 standards to produce 0.13 mgd of non-potable recycled water. The BayCycle Project would add capacity to the Title 22 treatment facilities at the WWTP to increase production. The efforts identified above are currently in various stages of design and planning by the City, although some initial siting and design has been completed for both the Title 22 Project and BayCycle Project, collectively referred to as the Regional Recycled Water Facilities project. Recycled water projects are common throughout California. The recycled effluent is treated to very high standards, and utilized for landscape and other non-potable uses. Recycled water offsets an equal amount of potable water used for the same purposes. These types of projects have proven feasible. The typical largest constraint is the need to install distribution pipelines throughout their service area. As currently envisioned, the Regional Recycled Water Facilities project would have the following potential impacts:

- ▶ **Aesthetics:** The project would not result in any significant impacts to aesthetics as the upgrades would be within the existing WWTP and distribution pipelines would be located underground within roadways. The location of a storage tank and pump station near the UC Santa Cruz main residential campus entrance is designated as Facilities & Support in the 2021 LRDP. While the storage tank and pump station would be consistent with the designation and the existing support type uses in that area, a water tank at the campus entrance would likely adversely affect the visual character and quality of the entrance area and the impact might be considered significant, requiring mitigation or an evaluation of another site for the tank.
- ▶ **Agriculture and Forestry Resources:** The project would be located within areas that are designated Urban and Built-up Land or Rural Residential Land by the FMMP. There would be no impacts to agriculture or forest lands.
- ▶ **Air Quality:** Other than short term emissions during the construction of the project, due to its nature, the project would not result in substantial emissions of criteria pollutants and toxic air contaminants. Air quality impacts would likely be less than significant.
- ▶ **Biological Resources:** The upgrades within the WWTP would not impact biological resources as the area is already disturbed and developed. The proposed distribution pipelines would be constructed within road rights-of-way. The location of the storage tank and pump station near the campus entrance is within a previously developed area. There are no vegetation communities, sensitive habitats, special status plants and wildlife species in the main residential campus entrance area. Less-than-significant impacts to biological resources would occur.
- ▶ **Cultural Resources/Tribal Cultural Resources:** The location of the storage tank and pump station near the campus entrance is within the Cowell Lime Works Historic District which is NRHP and CRHR listed. Construction of a water tank in the area could adversely affect the historic district. With respect to impacts on previously unknown

cultural resources and tribal cultural resources, and human remains during ground disturbing activities, those would be expected to be reduced to a less-than-significant level with implementation of mitigation measures.

- ▶ **Energy:** It is likely that pumps would need to be installed and used to move water from the wastewater treatment plant to the LRDP area, and then up to the colleges. Although this would consume more energy, given the necessity of water, this use of energy would not be wasteful, and energy impacts would likely be less than significant.
- ▶ **Geology and Soils:** The pipelines and upgrades within the existing WWTP would have less than significant impacts related to geology and soils. The location of the storage tank and pump station near the campus entrance is underlain by schist which is considered suitable for siting of such a facility. Impacts related to erosion and sedimentation during construction would be avoided by the implementation of a storm water pollution prevention plan (SWPPP) in compliance with NPDES requirements.
- ▶ **Greenhouse Gas Emissions:** Due to the nature of the project, which typically uses small amounts of electricity and does not create other notable GHG emissions, its operational emissions of GHG are expected to be minimal.
- ▶ **Hazards and Hazardous Materials:** Any hazardous materials used to treat wastewater up to Title 22 standards would be subject to State laws and local regulations related to storage and handling, and similar hazardous materials are currently used at the WWTP. Less-than-significant impacts from hazards and hazardous materials would occur.
- ▶ **Hydrology and Water Quality:** The project would not substantially increase the amount of impervious areas. In compliance with the NPDES requirements, implementation of a SWPPP would control discharge of sediment and pollutants into runoff during construction. Less-than-significant impacts to hydrology and water quality would occur.
- ▶ **Land Use and Planning:** The upgrades would be within the existing WWTP and all proposed distribution pipelines would be constructed within existing road rights-of-way. The location of the storage tank and pump station near the campus entrance is designated as Facilities & Support in the 2021 LRDP. The storage tank and pump station would be consistent with this designation and no impact would occur.
- ▶ **Mineral Resources:** There are no mineral resources in any of the areas where the project would be constructed. There would be no impact.
- ▶ **Noise:** Construction noise impacts would be reduced to less than significant levels with mitigation. Project operation could elevate noise levels in the vicinity of the WWTP and pump stations. There are no receptors near the WWTP that would be affected. Regarding pump stations, with acoustical enclosures, the pump station noise would result in a less-than-significant impact.
- ▶ **Population and Housing:** There would be no impacts to population and housing as no increases in local or regional population would occur as a result of project implementation.
- ▶ **Public Services and Recreation:** There would be no impacts to public services and recreation as no increases in local or regional population would occur as a result of project implementation.
- ▶ **Transportation:** No new permanent employees would be expected to be added due to project implementation, so no notable vehicle trips would be generated. During construction of the project, lane closures to install the pipes could be required, which could result in some temporary traffic congestion. The impact would, however, be temporary and less than significant.
- ▶ **Utilities and Services Systems:** The project would have no adverse impacts on other utilities including water and solid waste. The project would offset potable water demands, which would be considered beneficial.
- ▶ **Wildfire:** The project would not be constructed adjacent to or within wildfire areas. Potential pipelines would be constructed subsurface and within existing road rights-of-way. No impacts are anticipated.

As shown above, the project would largely result in less-than-significant impacts, with the exception of two impacts related to the Cowell Lime Works Historic District that could be reduced to less than significant through relocation of the proposed water storage tank on the main residential campus.

Potential Environmental Impacts Associated with a City Desalination Plant

Desalination plants treat ocean/brackish water and remove the salts so it can be used as potable water or in the same manner as recycled water. Desalination plants are uncommon in California, and typically face regulatory approval and cost challenges. However, locally there is a desalination plant in Sand City on the Monterey Peninsula and some plants have also been constructed in Southern California (such as in Carlsbad), so they are potentially feasible.

The City will consider desalination in the event that the efforts related to the Regional Recycled Water Facilities Planning Study do not achieve the targeted reductions in potable water needs for the City. For the purposes of this analysis, it is assumed that up to a 3.3-mgd (approximately 1,200 MGY) desalination plant may be required, although the formal design and construction timing of such a facility have yet to be determined. Such a facility would require permits from numerous local, state, and federal agencies, including the City, the County, the US Army Corps of Engineers, the US Fish and Wildlife Service, California Coastal Commission, California Department of Fish and Wildlife, the Regional Water Quality Control Board, and others. Due to its inclusion in the City's UWMP and Water Supply Augmentation Plan as a potential future water source, it is evaluated to the extent feasible herein for its environmental impacts.

In order to provide up to 3.3 mgd of desalination capacity through seawater reverse osmosis, the City would likely consider the following primary facilities as part of the project:

- ▶ A seawater intake and conveyance system (consisting of an intake structure, intake pipeline, pump station, and transfer piping) or use of subsurface radial collector wells. Three alternatives are under consideration by the City for the seawater intake system or subsurface radial collector wells.
- ▶ A seawater desalination plant that would provide for pre-treatment processing, desalination treatment and energy recovery, post-treatment processing and distribution, brine storage and disposal, residuals handling and disposal, chemical systems, and their associated support facilities. Three site alternatives are under consideration for the desalination plant site, which are all located near the intersection of Delaware Avenue and Natural Bridges Drive in an industrial area in the western portion of Santa Cruz.
- ▶ A brine disposal and conveyance system consisting of brine storage at the desalination plant, a new pipeline to the City's WWTP outfall, and outfall improvements; and
- ▶ Potable water distribution system improvements, consisting of a new connection to the City distribution system and new pipelines and pump station improvements.

A project, which was proposed jointly by the City and SqCWD and evaluated in the 2013 Regional Seawater Desalination Project EIR (State Clearinghouse No. 2010112038), is considered to be of similar scale and, for the purposes of this analysis, an indication of potential impacts associated with a City desalination plant. Based on the analysis presented in the 2013 EIR, the City desalination plant would likely have the following impacts:

- ▶ **Aesthetics:** Construction of a new desalination plant would increase light and glare in the area it is constructed. The impact related to light and glare would be reduced to a less than significant level with implementation of a mitigation measure to require lighting to comply with the most recent Leadership in Energy and Environmental Design for New Construction (LEED-NC) guidelines for light pollution reduction. Additionally, there would be less than significant impacts to scenic vistas, scenic resources, and the project would not change the visual character of the area.
- ▶ **Agriculture and Forestry Resources:** The project components would be located within areas that are designated Urban and Built-up Land by the FMMP. There would be no impacts to agriculture or forest lands.
- ▶ **Air Quality:** Other than short term emissions during the construction of the project which would be mitigated by standard dust control measures, the project would not result in substantial emissions of criteria pollutants and toxic air contaminants. Air quality impacts would likely be less than significant.
- ▶ **Biological Resources:** There could be a significant and unavoidable impact associated with conflicts with local policies related to the protection of monarch butterfly overwintering sites, depending on the location selected.

Offshore construction activities could affect marine life and habitats; however, the impact would be reduced to less than significant with mitigation. Based on design, the operation of the seawater intake system would not

have a substantial adverse effect on special-status or other marine species. Nor would the operation of the seawater intake system substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; or threaten to eliminate a plant or animal community.

Construction-related impacts to special status species, riparian habitat, jurisdictional waters and wetlands, wildlife movement, and conflicts with local plans and policies (except regarding local policies protecting monarch butterfly) would all be reduced to less than significant with mitigation.

- ▶ **Cultural Resources/Tribal Cultural Resources:** Impacts from inadvertent discovery of cultural resources, tribal cultural resources, and human remains would be reduced to a less-than-significant level with implementation of mitigation measures.
- ▶ **Energy:** Other than the short-term energy expenditure during the construction of the project, due to its nature, the project would not result in substantial energy consumption. Energy impacts would likely be less than significant.
- ▶ **Geology and Soils:** With implementation of mitigation measures, impacts related to geologic hazards and soil conditions would be reduced to a less-than-significant level.
- ▶ **Greenhouse Gas Emissions:** Less-than-significant impacts would occur related to GHG emissions as the desalination project would comply with the City's Green Building Program and would be net carbon neutral.
- ▶ **Hazards and Hazardous Materials:** Hazardous exposure to workers due to accidental spills and/or release of chemicals would be mitigated to less-than-significant levels with implementation of proper storage, containment, and emergency controls. Construction impacts related to encountering contaminated soils during construction and the impact from use of hazardous materials near schools would be reduced to a less than significant level with mitigation.
- ▶ **Hydrology and Water Quality:** With implementation of mitigation measures, onshore and offshore construction water quality impacts would be reduced to less than significant. Operation on the proposed desalination plant could increase the rate, amount, or quality of surface runoff in a manner that could result in substantial erosion or siltation on- or off-site, or provide substantial additional sources of polluted runoff. Mitigation measures would be implemented to reduce to a less-than-significant level. The project would dilute the brine from the desalination process by combining it with the City's WWTF effluent prior to discharge through the existing WWTF outfall to avoid potential adverse effects of elevated salinity on the marine environment.
- ▶ **Land Use and Planning:** Construction and operational impacts related to land use and planning would be reduced to a less-than-significant level with mitigation.
- ▶ **Mineral Resources:** There are no mineral resources in any of the areas where the project would be constructed. There would be no impact.
- ▶ **Noise:** Construction and operational impacts related to noise would be reduced to less-than-significant levels with mitigation.
- ▶ **Population and Housing:** The project would not add any people or housing to the project area, nor would it displace any people or homes. No impact would occur.
- ▶ **Public Services and Recreation:** There would be no impacts to public services and recreation as no people would be directly added to the City or other communities due to the project.
- ▶ **Transportation:** As no people would be added due to project implementation, no vehicle trips would be generated. No impacts due to operational traffic would occur. Prior to construction of the project, a traffic control plan would be prepared and implemented which would reduce any temporary construction impacts to a less than significant level.
- ▶ **Utilities:** An operational impact related to wastewater systems could be potentially significant. Implementation of a mitigation measure would reduce the impact to a less-than-significant level.
- ▶ **Wildfire:** The project would not be constructed adjacent to or within wildfire areas. No impacts are anticipated.

As shown above, other than a significant and unavoidable impact related to a conflict with a local policy for the protection of biological resources, all of the impacts of the desalination project would be less than significant with incorporation of appropriate mitigation.

Groundwater Recharge

In-Lieu Transfers (Passive Recharge)

In normal years, the City receives more rainfall than is needed to meet SCWD customer demand, and the additional water can be stored in Loch Lomond Reservoir. The adjacent SqCWD and/or SVWD rely on groundwater to serve their customers. Using in-lieu water exchanges, available winter flows could be delivered to SqCWD and/or SVWD customers, thus allowing reduced pumping by one or both water districts from these regional aquifers and enabling the aquifer to passively rest and recharge. The City's concept for this alternative is to start quickly as a small pilot program, for which a negative declaration was filed in 2015, relying on existing infrastructure to provide potable water to the SqCWD. The program could grow over time, if/as additional infrastructure is developed, additional agreements are reached with SqCWD and SVWD, and any needed changes to water rights are granted by the State of California.

Aquifer Storage and Recovery (Active Recharge)

With aquifer storage and recovery, available winter flows would be injected into aquifers through new and existing wells owned by the SCWD, SVWD and/or SqCWD, thereby actively recharging aquifers. The water would be effectively banked in the aquifers to be extracted and returned to SCWD as a supplemental supply when needed in future dry years. This program could proceed through evaluation and piloting steps and, if successful, can be implemented on a scale sufficient to meet the yield goals of the plan. This alternative could be implemented by using existing infrastructure (wells, pipelines, and treatment capacity) and potential new infrastructure (wells, pipelines and treatment capacity) in the regionally shared Purisima aquifer in the Soquel-Aptos basin and/or in the Santa Margarita/Lompico/Butano aquifers in the Scotts Valley area.

Because both in lieu transfers and ASR options are based on water transfers between water districts and the recharge of the groundwater basin using surface water, both options are generally similar in terms of infrastructure needs. Both options would rely on the use of existing facilities that include water diversions, water treatment facilities, pumps and pipelines and wells, and both options would involve, in varying degrees, improvements to existing diversions, water treatment plant upgrades, additional pump stations, interties, and new wells (for active recharge).

Campus Initiatives to Reduce/Offset Potable Water Supply Demands

Water conservation measures are common throughout California, ranging from use of recycled water (discussed above), repairing leaking infrastructure, replacing older faucets and other plumbing fixtures, using drought-tolerant landscaping, and other measures. Moreover, in drought-prone California, intensive use restrictions (limiting landscape irrigation, reducing toilet flushing, public information campaigns, tiered pricing) have proven successful at substantially reducing water during severe drought periods.

At UC Santa Cruz, the university's WAP, which began implementation in 2013 and was updated in 2017, requires UC Santa Cruz to reduce water use per campus user by 20 percent by 2020 and 36 percent by 2025, which corresponds to Element 0 of the City's Water Supply Augmentation Plan. To date, UC Santa Cruz has already achieved the target reductions provided in the WAP, which are in excess of the City's plan targets. The 2017 WAP also included several additional opportunities that UC Santa Cruz continues to evaluate on a project-by-project basis, as funding is available. These additional measures include:

- ▶ developing water reduction targets based on use type for the entire LRDP area to further water conservation practices and usage reduction in non-drought conditions;
- ▶ employing, where feasible, the use of non-potable water sources for irrigation purposes;
- ▶ continually identify and replace aging infrastructure to reduce leakage and system inefficiencies;
- ▶ removing turf or other high-water-demand vegetation to the extent feasible; and
- ▶ replacing single-pass cooling systems.

The ability for UC Santa Cruz to consider further on-site water recycling efforts, similar to the City's current undertaking, is subject to funding availability for individual projects. However, UC Santa Cruz has demonstrated a desire to incorporate on-site water recycling, as evidenced by the Student Housing West project, and the impacts of such efforts would be site-specific but typically are restricted to operational noise, construction air quality, and operational odors, all of which can typically be mitigated. Additionally, UC Santa Cruz would comply with any service area wide water restrictions and mandatory use curtailment imposed by the City in response to a declaration of water shortage emergency and/or if the City establishes a service area wide moratorium on new connections because of a water shortage emergency.

In summary, the City of Santa Cruz and UC Santa Cruz are pursuing or can pursue a variety of alternatives to both increase supply and reduce demand for water. Some alternatives, such as recycled water and conservation, are more probable than others, such as desalination, based on permitting challenges and cost.

Potential Impacts if 2021 LRDP Development is Curtailed Due to Insufficient Water Supply

As described above, there is currently insufficient water supply, particularly during multiple dry years, to serve the long-term needs of the City of Santa Cruz, including full implementation of the proposed 2021 LRDP. A number of alternatives are being considered to supplement supply. Because many of them are common supplemental supply sources (such as recycled water and more conservation), there is a reasonably high probability that the City will be able to successfully supplement its water sources. This would not likely eliminate the need to impose stringent conservation measures, as the City already does, during multiple dry years. This is common in California, where occasional drought is an expected part of life in the state.

However, this would not remedy the uncertainty surrounding the water service boundary. While UC Santa Cruz believes the contractual obligations for the City to serve water to the entire campus are clear, the City has taken the position that it is not required to do so, and litigation to resolve this issue is pending as of the date of publication of this Draft EIR.

Approximately 43 percent of housing and 8 percent of academic and support space under the 2021 LRDP is estimated to be located outside the service boundary. The 2021 LRDP would generate an additional demand of 134.6 MGY, so demand in the area outside the service boundary under the 2021 LRDP would be approximately 41.5 MGY.

After evaluating all potential alternative sources of water, it is apparent that UC Santa Cruz has access to only one potential source of water in the event the City does not provide water beyond the current service boundary, and that is groundwater. As discussed previously and in Section 3.10 (Hydrology and Water Quality), 4 test wells were installed in the late 1980's in the Jordan Gulch area of the main residential campus to evaluate groundwater resources. A sustainable flow rate equal to approximately 48.6 MGY (133,150 gpd) was produced with no discernible downstream effects. None of the springs or streams downstream of the main residential campus showed any signs of reduced flow. These wells have not been used for water supply since they were installed.

Section 3.10-5 of this EIR evaluates the potential of using groundwater to supply water to UC Santa Cruz. The analysis evaluated use of up to 12 MGY (36.9 AFY) and concluded no adverse groundwater effects, including to offsite springs, would result. This is, in part, because the hydrology analysis concluded that the main residential campus is estimated to store approximately 977 MG of groundwater, and that approximately 181 MGY leaves the main residential campus as subsurface flow. The 12 MGY is around one percent of the storage capacity and less than one percent of the total surplus groundwater that flows off campus. While the hydrology analysis did not evaluate using as much as 42.4 MGY, this quantity is only 3 percent of the total subsurface flow that leaves the campus. Further, this is less than the sustainable flow rate tested in wells in the Jordan Gulch area. It is conceivable that sufficient groundwater, if treated, could be used to supply potable water to the area outside the water service boundary.

Assuming a well field, pumps, delivery pipelines, and a water treatment plant (approximately 2 acres assumed) were constructed, the following Impacts of using this groundwater may result:

- ▶ **Aesthetics:** Impacts would primarily be associated with a water treatment plant, as all other infrastructure would be subsurface or low to the ground, and not visible from a distance. However, water treatment plants can be relatively small, with the largest facilities being tanks that are approximately 20-feet high, and it would likely not

be visible off campus due to the fact that most of the campus is shrouded in large trees. Accordingly, aesthetic impacts would be less than significant.

- ▶ **Agriculture and Forestry Resources:** Wells have small footprints, and the water treatment plant would also be on a small site. There would likely be no impacts to agriculture or forest lands.
- ▶ **Air Quality:** Other than short term emissions during the construction of the facilities which would be mitigated by standard dust control measures, the operations would only produce minor emissions as a result of pumps and water treatment plant use, which would be electric powered. Air quality impacts would likely be less than significant.
- ▶ **Biological Resources:** There could be minor impacts to sensitive species as a result of construction noise and vibration and pipeline construction, but these impacts could be reduced or avoided by careful siting and implementation of 2021 LRDP measures related to avoidance and monitoring.
- ▶ **Cultural Resources/Tribal Cultural Resources:** Impacts from inadvertent discovery of cultural resources, tribal cultural resources, and human remains could occur during construction, particularly pipeline trenching, but would be reduced to a less-than-significant level with implementation of 2021 LRDP mitigation measures.
- ▶ **Energy:** Energy would be needed to operate pumps and a water treatment plant, but such energy use would not be considered wasteful and therefore Energy impacts would likely be less-than-significant.
- ▶ **Geology and Soils:** With implementation of mitigation measures, impacts related to geologic hazards and soil conditions would be reduced to a less-than-significant level.
- ▶ **Greenhouse Gas Emissions:** Less-than-significant impacts would occur related to GHG emissions as the energy use would be relatively minimal and would comply with the UC carbon neutrality policies.
- ▶ **Hazards and Hazardous Materials:** Hazardous exposure to workers due to accidental spills and/or release of chemicals would be mitigated to less-than-significant levels with implementation of proper storage, containment, and emergency controls.
- ▶ **Hydrology and Water Quality:** Additional study would be needed to determine how much groundwater could be extracted and still have no effects on downstream springs. In addition, the karst aquifer system is not well understood. Ongoing groundwater level and spring flow monitoring would be needed, but if UC Santa Cruz committed to using groundwater to supply water to this area of the 2021 LRDP, there is a potential for a significant impact. However, the data discussed above suggests there may be sufficient groundwater to serve this area without adversely affecting downstream uses.

No other impacts would be expected.

As shown above, there is a potential for a significant impact related to hydrology related to downstream springs. While such an effect is not likely, additional study would be needed to draw a conclusion.

Potential Environmental Impacts Associated with No 2021 LRDP Development Above Water Service Boundary

If service to the area outside the water service boundary is not provided and use of groundwater is infeasible or restricted due to downstream impacts, development under the 2021 LRDP would be curtailed.

Academic/administrative or residential uses outside of the current boundary would not be developed and enrollment would be limited to match the number of student beds that would be constructed within the current City-designated water service area boundary. 2021 LRDP development would be curtailed as follows:

- ▶ Approximately 4,800 new student beds would be constructed instead of 8,500 student beds under the proposed 2021 LRDP. (About 3,700 student beds that are planned for the north campus under the proposed 2021 LRDP would be eliminated.)
- ▶ The projected enrollment level would be reduced to 24,300 FTE, compared to the 28,000 FTE under the 2021 LRDP to align with the reduction in planned student housing, such that all additional students above the 2005 LRDP would be housed on campus.

- ▶ The employee housing identified in the 2021 LRDP could be relocated within other envisioned employee housing areas under the 2021 LRDP, resulting in no decrease in future employee housing.
- ▶ The projected increase in employees (i.e., faculty/staff) would be reduced to 1,232 FTE, compared to the 2,200 FTE under the 2021 LRDP to align with the reduction in student enrollment.
- ▶ Approximately 200,000 assignable square feet (8 percent) of the total academic/administrative and support space envisioned under the 2021 LRDP would not be constructed, as it is also currently envisioned outside of the City's water service boundary.

The potential environmental impacts associated with this scenario would be as follows:

- ▶ **Aesthetics:** Changes to the visual environment under this scenario would be similar to those under the 2021 LRDP, but the degree of change would be somewhat reduced as less overall development would be constructed. Development on the central and lower campus that is more visible than areas above the City water service area boundary would still occur and would result in similar changes in long-distance views and visual character as the 2021 LRDP. Mitigation identified for the 2021 LRDP would still be required to reduce impacts along designated scenic roadways and to reduce the potential for light spillover and skyglow as a result of campus development. The overall aesthetic impacts would be similar to that of the 2021 LRDP, and the impacts would be reduced to less than significant with incorporation of the same mitigation measures. (*Similar impact*)
- ▶ **Agriculture and Forestry Resources:** The small conversion of agricultural land to non-agricultural use would still occur to accommodate anticipated development within the lower portion of the main residential campus. This is a less than significant impact of the 2021 LRDP. Additionally, impacts to forestry resources would also be less than significant with adherence to requirements related to the preparation and implementation of Timber Harvest Plans and Timber Conversion Permits. Nonetheless, due to the lesser level of development that would occur within forested areas of the campus, overall impacts to forestry resources under this scenario would be less than those under the proposed 2021 LRDP. (*Less impact*)
- ▶ **Air Quality:** Because there would be no development above the City water service area boundary, this scenario would include less development of residential and academic building space than would occur under the proposed 2021 LRDP, and the campus population increase would be smaller under this scenario. As with the proposed 2021 LRDP, large-scale construction projects or a number of campus projects could occur simultaneously which could result in construction emissions that exceed applicable thresholds; however, any such exceedance would likely be for shorter periods of time due to the reduced amount of new development under this alternative. Thus, construction-related air quality impacts would be reduced compared to those under the 2021 LRDP. Mitigation would still be required, and significant and unavoidable impacts from construction could still occur. Operational air impacts under this scenario would be similar in nature to those described for the 2021 LRDP but reduced in magnitude because of the smaller population and building space increase. As with the 2021 LRDP, it is possible that operational emissions could exceed MBARD operational thresholds. Mitigation of operational emissions would still be required, but it is possible thresholds would still be exceeded. For this reason, operation-related air quality emissions would likely remain significant and unavoidable. (*Similar impact*)
- ▶ **Biological Resources:** This scenario would result in an overall reduction in the area of land disturbance as development above the City water service area boundary would be avoided. However, the scenario would result in similar impacts on the central and lower campus. Because habitat for special-status plant and wildlife species, as well as riparian habitat, wetlands, wildlife movement corridors and nursery sites are present in the central and lower campus, implementation of this scenario would result in all of the significant impacts described in Section 3.5, "Biological Resources," and implementation of the same mitigation measures would still be required in order to reduce the significant impacts to less-than-significant levels. However, because of the reduced development footprint, there would be slightly reduced impacts to biological resources compared to the 2021 LRDP. (*Less impact*)
- ▶ **Cultural Resources:** While the reduced development footprint and earth-moving/construction activities under this scenario would reduce the potential to encounter and disturb archaeological resources or unknown human remains, significant impacts on archaeological resources and unknown human remains could still occur from

development on the lower and central campus, and the same mitigation would be required to reduce impacts to archaeological resources and compliance with regulations would be required to avoid impacts on human remains. Regarding historic resources, likely impacts under this scenario would be the same as under the proposed 2021 LRDP as no historic resources are present in the portions of the north campus that would be developed under the 2021 LRDP and avoided under this scenario. The same mitigation would still be required to ensure, where feasible, that future projects would not result in damage to or destruction of a building or structure that is a designated historic resource or eligible for listing as a historic resource or a potential historic resource that has not yet been evaluated. As with the proposed 2021 LRDP, redevelopment within the main residential campus under this scenario could result in the loss of historic buildings. Therefore, impacts would still be significant and unavoidable. *(Similar impact)*

- ▶ **Energy:** Under this scenario, reduced development would occur, which would result in reduced construction activities and less fuel use during construction, as well as less energy demand associated with the operation of new campus structures. As with the 2021 LRDP, the impacts related to energy would be less than significant. *(Less impact)*
- ▶ **Geology and Soils:** Under this scenario, development on the north campus would be avoided although development on the central and lower campus would occur in the same manner as under the proposed 2021 LRDP. Because the development footprint of this alternative would be reduced compared to the proposed 2021 LRDP, impacts related to geology and soils would be slightly reduced compared to the proposed 2021 LRDP. *(Less impact)*
- ▶ **Greenhouse Gas Emissions:** Because the amount of development would be reduced under this scenario as compared to the proposed 2021 LRDP, construction and operational GHG emissions would be reduced. The volume of GHG emissions to be mitigated may be less although development under this scenario would also be subject to the UC Sustainable Practices Policy. Therefore, due to less development on campus compared to the proposed 2021 LRDP, impacts would be slightly reduced. *(Less impact)*
- ▶ **Hydrology and Water Quality:** Earth-moving activities associated with construction under this scenario would affect hydrology and water quality similar to the construction activities under the proposed 2021 LRDP. The types of impacts include reduced groundwater recharge, alterations to existing drainage systems, and effects on the 100-year floodplain. Mitigation measures are recommended to reduce these impacts to less-than-significant levels. Existing regulations and permitting requirements, such as NPDES permit conditions and a SWPPP, would also be required to reduce water quality impacts to less-than-significant levels. Because this scenario would involve less development within currently undeveloped areas, alterations to existing drainage systems and coverage of groundwater recharge areas may be slightly reduced compared to the proposed 2021 LRDP. Although a lesser level of development would occur, the degree to which these measures would need to be implemented would likely be similar. Therefore, impacts would be less but would remain less than significant with mitigation. *(Less impact)*
- ▶ **Mineral Resources:** No known mineral resources occur within the LRDP area. As a result, this scenario would result in no impact, similar to the proposed 2021 LRDP. *(Similar impact)*
- ▶ **Noise:** This scenario would result in less overall development, and thus, would generate less construction and operation-related noise, potentially over a shorter period of time. This scenario would avoid development in the northern portion of campus which would likely have limited or no noise impacts on off-campus receptors. Regarding long-term increases in traffic noise, the on-campus population under this alternative would be reduced, which would result in lesser daily vehicle traffic and associated noise on project-affected roadways to the project. However, as noted in Section 3.12, "Noise," roadway noise impacts would be less than significant. Therefore, similar impacts would occur, including a significant and unavoidable impact with respect to construction noise. *(Similar significant and unavoidable construction-related impact; less operation-related impacts but still less than significant)*
- ▶ **Population and Housing:** Under this scenario, UC Santa Cruz would still provide a student bed for each new student above 19,500, similar to the proposed 2021 LRDP. Therefore, similar to the proposed 2021 LRDP, no new students would seek off-campus housing under this scenario. This scenario would reduce enrollment and the

amount of new academic/administrative and support space on campus, which would reduce the number of new faculty/staff that would be present at the main residential campus. As a result, the demand for new faculty/staff seeking housing in the area would likely be less than under the proposed 2021 LRDP and would also be less than significant. Implementation of this scenario would similarly not result in unplanned growth in campus population, and impacts would be less than significant. (*Similar impact*)

- ▶ **Public Services:** Although fewer students and employees would be present on the campus under this scenario, impacts to public services would likely be similar in terms of overall demand for public services. For example, modernization/replacement of the existing on-campus fire station would likely still be required. As a result, impacts would be similar to those of the proposed 2021 LRDP and would be less than significant. (*Similar impact*)
- ▶ **Recreation:** Although fewer students and employees would be present on campus under this scenario, fewer recreational facilities associated with those students would be provided. As a result, the impacts related to recreation would be similar to those of the proposed 2021 LRDP and would be less than significant. (*Similar impact*)
- ▶ **Transportation:** The development of less student housing and academic/administrative and support space would reduce on-site population, such that overall VMT would be reduced. However, similar transportation demand reduction measures to reduce VMT associated with faculty/staff commutes would be necessary in order to ensure a less-than-significant impact. Consistency with policies related to alternative transportation (transit, bicycle, and pedestrian) would be similar. (*Similar impact*)
- ▶ **Utilities and Service Systems:** Because this scenario would result in less overall development on campus, demand for utilities and service systems may be somewhat reduced when compared to the proposed 2021 LRDP. Similar to the 2021 LRDP, campus development would increase water consumption needs and wastewater generation. Campus potable water supplies would continue to be derived from the City, though potable water demand would be lower under this scenario due to the smaller increase in campus population, new student housing and new academic and administrative space on campus. Nonetheless, the incremental demand for water on the campus under this scenario may still result in a significant impact on water supply as it would contribute to the need for the City to develop new water supply sources to address the gap between supply and demand under multi-dry water year conditions. With respect to wastewater treatment and conveyance capacity, adequate capacity would be available, although the degree to which additional flows would occur would be less than the proposed 2021 LRDP. As under the proposed 2021 LRDP, impacts on utilities would generally be less than significant; however, water supply impacts would remain significant and unavoidable. (*Less impact*)
- ▶ **Wildfire:** Development under this scenario would still require the continued implementation and adaptation of existing UC Santa Cruz wildfire risk reduction and evacuation procedures. Impacts would be less than significant, similar to the proposed 2021 LRDP. (*Similar impact*)

Nonetheless, as noted above and taking into consideration existing, feasible water demand reduction and alternative water supplies, UC Santa Cruz's remaining water demand with implementation of the 2021 LRDP would contribute to the need for the City to further restrict water deliveries or secure a new water source for multiple dry water year conditions. As set forth above, the development of a new water source would have the potential to result in significant and unavoidable environmental impacts. The 2021 LRDP would therefore result in a significant impact.

Mitigation Measures

Mitigation Measure 3.17-1a: Require Implementation of Measures Consistent with City Drought Measures

If and when the City of Santa Cruz implements drought emergency management measures, UC Santa Cruz shall implement the following measures for the duration of the drought emergency:

- ▶ Reduce use of potable water for irrigation of campus landscaping, including the Arboretum, in accordance with reductions required by the City for similar users;
- ▶ Utilize water from the existing supply well in Jordan Gulch. UC Santa Cruz shall implement a program of monitoring flow at downgradient springs during the time when the well is being used;

- ▶ Require academic/administrative water use on campus be reduced, consistent or in excess of the City's target for business facilities; and
- ▶ Require residential water use on campus be reduced, consistent or in excess of the City's target for multifamily residential facilities.

Mitigation Measure 3.17-1b: Evaluation and Implementation of Additional Water Conservation Measures

Within one year following approval of the 2021 LRDP, UC Santa Cruz shall consult with the City of Santa Cruz regarding the appropriate scope of and initiate an engineering audit of campus water use, similar to the previous audit completed in 2007. The audit will assess existing campus water uses, identify additional options for reducing water consumption, prioritize feasible improvements based on the amount of potential water savings and cost effectiveness (and in light of measures already completed by UC Santa Cruz), and recommend top priority measures for implementation within the succeeding five years, and lower priority measures for potential subsequent implementation. The audit will include, but will not be limited to the following:

- ▶ An inventory of plumbing fixtures in non-housing facilities on campus, which will identify the number and locations of fixtures and identify those that do not meet current campus standards for water efficiency;
- ▶ An inventory of irrigation systems on the campus, including identification of systems that are not metered, the methods used to control the irrigation schedule, and potential for improvement;
- ▶ An inventory of locations on campus where buildings and irrigation are on the same meter;
- ▶ An analysis of potential water conservation measures for the campus cooling water system; and
- ▶ Identification of landscaped areas on campus that have plants that are high water-use.

Following completion of the audit, UC Santa Cruz shall implement measures determined in cooperation with the City of Santa Cruz to address issues identified in the audit. In addition, UC Santa Cruz shall also provide an internal audit every five years with an external audit every ten years on the level of implementation of identified measures, as well as identifying and requiring implementation (where feasible) of potential new technologies or measures from other regional/local studies that could be implemented moving forward. As part of this effort, UC Santa Cruz shall consider necessary updates to the UC Santa Cruz Water Action Plan and coordinate with relevant campus departments.

Significance after Mitigation

No additional mitigation measures are feasible at this stage of plan development. As noted above with respect to project-specific considerations, additional on-site water recycling and water demand reduction measures may be feasible but would be subject to technological demands and funding. As a result, it would be speculative to assume that implementation of additional measures would reduce the campus's water demand sufficiently to avoid or substantially reduce the 2021 LRDP's significant impact on water supply. As a result, if 2021 LRDP development is curtailed to eliminate development outside the City's current water service area boundary, impacts would be **significant and unavoidable**.

Impact 3.17-2: Require Construction of New/Expanded Water Infrastructure

Implementation of the 2021 LRDP could require new water connections or expanded water conveyance systems. However, the construction of new or expanded water infrastructure are comprehensively analyzed in this EIR. This impact is considered **less than significant**.

As noted in Chapter 2, "Project Description," development under the 2021 LRDP could require new water connections or expanded water conveyance systems, and new on-campus infrastructure would be provided as development is proposed and is constructed within the LRDP area. Potential improvements could include new water mains within the main residential campus, connections to new buildings on campus, the installation of purple lines for conveyance of recycled water, or infrastructure for City-related new water sources. As also noted above and in Section 3.10, "Hydrology and Water Quality," UC Santa Cruz, as part of its ongoing sustainability efforts, evaluates the potential for on-site water

recycling on a project-by-project basis, as demonstrated by Student Housing West (refer to Chapter 4, “Cumulative Impacts” for further information regarding this planned-but-not-operational project under the 2005 LRDP). However, no campus-wide plan for water recycling is proposed as part of the LRDP. General construction impacts anticipated to result from implementation of the 2021 LRDP, including the construction of new water-related infrastructure (e.g., connections or expanded water conveyance systems), are comprehensively analyzed in this EIR (e.g., within 3.3, “Air Quality;” 3.4 “Archaeological, Historical, and Tribal Cultural Resources;” 3.5, “Biological Resources;” 3.10, “Hydrology and Water Quality;” 3.12, “Noise;” and 3.16, “Transportation”). Further, as required by law, all connections would be constructed in accordance with all applicable building codes and applicable standards to ensure an adequately sized and properly constructed water conveyance systems. Thus, the potential impacts resulting from the extension of water infrastructure within the UC Santa Cruz main residential campus or improvements at the Westside Research Park are addressed by this EIR’s analysis. Regarding infrastructure for City-related new water sources, environmental impacts from the development of new water sources by the City are set forth in Impact 3.17-1 above.

Because the impacts associated with the potential construction of new water connections or expanded water conveyance systems are considered as part of the programmatic development and are addressed in the construction impact discussions in the appropriate technical sections of this EIR, based on the analysis, implementation of the 2021 LRDP would not result in the construction of water infrastructure outside of what is proposed as part of this project, nor construction that would have significant environmental impacts. The impact is considered **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.17-3: Require Construction of New/Expanded Wastewater Infrastructure to Comply with Applicable Wastewater Treatment Requirements

Implementation of the 2021 LRDP would not exceed the available capacity of existing wastewater infrastructure nor would it require the construction or expansion of wastewater treatment facilities or conveyance systems that could cause significant environmental effects. This impact would be **less than significant**.

Under the 2021 LRDP, population increases would result in greater levels of wastewater flows, as shown in Table 3.17-11. Under future conditions, on-campus uses are projected to generate up to 0.58 mgd of wastewater, an increase of 0.21 mgd compared to existing conditions. Similar to existing conditions, projected wastewater flows would remain below the existing design capacity of the City of Santa Cruz WWTP, which can treat an average dry weather flow of 17 mgd. As discussed previously, the WWTP currently receives an average daily flow of less than 10 mgd. The project increase is equal to around 2 percent of the current flow and approximately 3 percent of available capacity. The City does not appear to have any immediate plans to add capacity.

Table 3.17-11 Existing and Projected Wastewater Generation

	Existing	Projected Total Campus Demand
Annual Wastewater Generation (million gallons per year)	134	212
Daily Wastewater Generation - Average (mgd)	0.37	0.58
Wastewater Treatment Plant Capacity - Average (mgd)	17	17
Adequate Capacity	Yes	Yes

Source: Compiled by Ascent Environmental.

Because adequate capacity remains at the WWTP to accommodate projected flows from the campus, no significant impacts would occur. Additionally, and as stated in Chapter 2, “Project Description,” several improvements are anticipated within the LRDP area prior to 2040/2041. Currently up to two additional pump stations and several sewer mains may be constructed as part of 2021 LRDP implementation. The 2021 LRDP also includes the proposed relocation of the east trunk line out of Jordan Gulch beneath Hagar Drive, which would also require construction of a lift station within the gulch. The impacts of these improvements are evaluated as part of the overarching analysis of

2021 LRDP development. Based on the analysis, implementation of the 2021 LRDP would not result in the need for construction of additional wastewater collection/treatment infrastructure that would have significant environmental impacts. The impact is considered **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.17-4: Impacts to Solid Waste Facilities and Compliance with Regulations Related to Solid Waste

Implementation of the 2021 LRDP would increase solid waste generation at the main residential campus and Westside Research Park. However, adequate landfill capacity is available at local landfills to accommodate additional solid waste generated by the project. Compliance with the UC Sustainable Practices Policy would continue to reduce landfill disposal of solid waste, consistent with CIWMA, AB 341, SB 1374, AB 1826, and SB 1383. This impact would therefore be **less than significant**.

Under the proposed 2021 LRDP, the total on-campus population, including dependents and non-UC employees, could grow from about 22,300 persons (2018-2019 academic year) to an estimated total campus population of 35,230 persons in 2040-2041, which is an increase of 12,830 persons. Assuming that waste generation rates remain the same as under 2018-2019 conditions (see "Analysis Methodology," above), this would result in an increase in municipal solid waste produced at UC Santa Cruz. However, because of increased diversion rate requirements, landfilled quantities are anticipated to be substantially decreased by 2040 (refer to "Regulatory Setting" related to solid waste). Existing and projected solid waste generation at UC Santa Cruz, as well as the total anticipated amount to be disposed of at the RFF, are shown in Table 3.17-12. As noted above, the landfill has an anticipated closure date of 2058.

Table 3.17-12 UC Santa Cruz Solid Waste Generation

Waste Type	Existing (2018/2019) (tons per year)	Projected (2040/2041) Campus Solid Waste with 2021 LRDP (tons per year)
Total Municipal Solid Waste Generated	4,251	6,693
Municipal Solid Waste Diverted from Landfill	2,189	3,413 ¹
Municipal Solid Waste Landfilled at City of Santa Cruz Resource Recovery Facility	2,062	3,280

¹ Calculated based on 2018/2019 diversion rate of 51 percent.

Source: Compiled by Ascent Environmental

The UC Sustainable Practices Policy goals for solid waste include a reduction of 25 percent per capita from FY2015/16 levels by 2025, 50 percent per capita from FY2015/16 levels by 2030, and a diversion of 90 percent of municipal solid waste from the landfill. Meeting these goals would result in a further reduction in the amount of municipal solid waste generated on-campus beyond that shown in Table 3.17-12. In FY2015/16, UC Santa Cruz generated 4,194.7 tons of solid waste (UC Santa Cruz 2020) with a campus enrollment of 17,012 FTE students (or approximately 0.25 tons per FTE student). With a 50 percent reduction in the per capita rate, the 2030 per capita rate would be approximately 0.12 annual tons per FTE student. If UC Santa Cruz achieves this goal in 2030, upon full implementation of the proposed 2021 LRDP, UC Santa Cruz would generate 3,452 tons per year. Assuming the policy diversion rate of 90 percent, only 345 tons would require disposal at the RFF on an annual basis.

Because quantities of landfilled municipal solid waste are projected to decrease through 2040-2041, and the RFF facility has an expected closure date of 2058 with a maximum permitted throughput of 535 tons per day, the 2021 LRDP would not substantially affect landfill capacity such that additional waste disposal facilities would be required. Therefore, this impact is considered **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.17-5: Require Relocation or Construction of New Electricity, Natural Gas, or Telecommunications Facilities, the Construction of which Would Result in Significant Environmental Impacts

New energy facilities may be required as part of 2021 LRDP development. However, the impacts associated with new infrastructure are evaluated as part of the overall 2021 LRDP development. New facilities would be constructed to serve proposed development and any relocated facilities would be coordinated with PG&E in order to ensure no interruption of service. Thus, this impact would be **less than significant**.

PG&E provides both natural gas and electricity distribution infrastructure to customers in Santa Cruz County, including the UC Santa Cruz campus. PG&E owns and operates overhead electric transmission and electric distribution facilities as well as gas transmission facilities within the LRDP area. Implementation of the 2021 LRDP would increase energy usage as noted above. However, PG&E periodically prepares load forecasts to ensure the reliability of its electricity/natural gas distribution system. As implementation of the 2021 LRDP would occur over a multi-year period, the projected energy demands of UC Santa Cruz under the 2021 LRDP would be factored into PG&E's load forecasts now and in the future. Though PG&E's total system demand is expected to continue to increase annually, excluding any unforeseen problems, PG&E's plans for new distribution resources would be adequate to serve all existing and new customer loads during implementation of the 2021 LRDP. Upon updating their load forecasts, PG&E may determine a need to provide additional distribution facilities within the campus to serve UC Santa Cruz. Similarly, telecommunication infrastructure upgrades to both the central facility and the distribution lines are expected over the lifetime of the 2021 LRDP for bandwidth, reliability, and flexibility. Construction of energy, natural gas, or telecommunication transmission and/or distribution lines would occur in conjunction with new development under the 2021 LRDP.

General construction impacts anticipated to result from implementation of the 2021 LRDP, including the construction or undergrounding of electricity, natural gas, or telecommunication transmission and/or distribution lines, are comprehensively analyzed in this EIR (e.g., within 3.3, "Air Quality;" 3.4 "Archaeological, Historical, and Tribal Cultural Resources;" 3.5, "Biological Resources;" 3.10, "Hydrology and Water Quality;" 3.12, "Noise;" and 3.16, "Transportation"). Further, as part of the 2021 LRDP and as shown in Chapter 2, "Project Description," UC Santa Cruz has anticipated future electricity, natural gas, and telecommunications facilities, based on the envisioned development areas of campus. New facilities that may be required as development occurs under the 2021 LRDP include new electrical lines and a substation within the western portion of the main residential campus, as well as a standby generator facility along Heller Drive. Refer to Chapter 2, "Project Description" for further clarification. 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 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 UC Santa Cruz main residential campus and the Westside Research Park are evaluated within the scope of this EIR's analysis.

Because the impacts associated with the potential construction of on-site transmission and/or electricity, natural gas, or telecommunication distribution lines are considered as part of the programmatic development and construction impact discussions in the appropriate technical sections of this EIR, based on the analysis, implementation of the 2021 LRDP would not result in the construction of additional utility infrastructure beyond what is proposed/anticipated as part of this project that would have significant environmental impacts. The impact is considered **less than significant**.

Mitigation Measures

No mitigation is required.