4.8 UTILITIES AND SERVICE SYSTEMS

4.8.1 INTRODUCTION

The Utilities and Service Systems chapter analyzes the project's impact on the public utilities and services provided in the City of Davis, including domestic water supply and delivery, wastewater collection and treatment, solid waste disposal, electricity and natural gas, and telecommunications. Utility demands resulting from implementation of the proposed project are calculated using standard demand ratios. Information for this section was drawn primarily from the *Davis General Plan*[1] and associated EIR,[2] the City of Davis *Final 2015 Urban Water Management Plan (UWMP)*,[3] the *Davis Integrated Waste Management Plan*,[4] and the *Preliminary Utility Study* prepared for the proposed project by Cunningham Engineering.[5]

4.8.2 EXISTING ENVIRONMENTAL SETTING

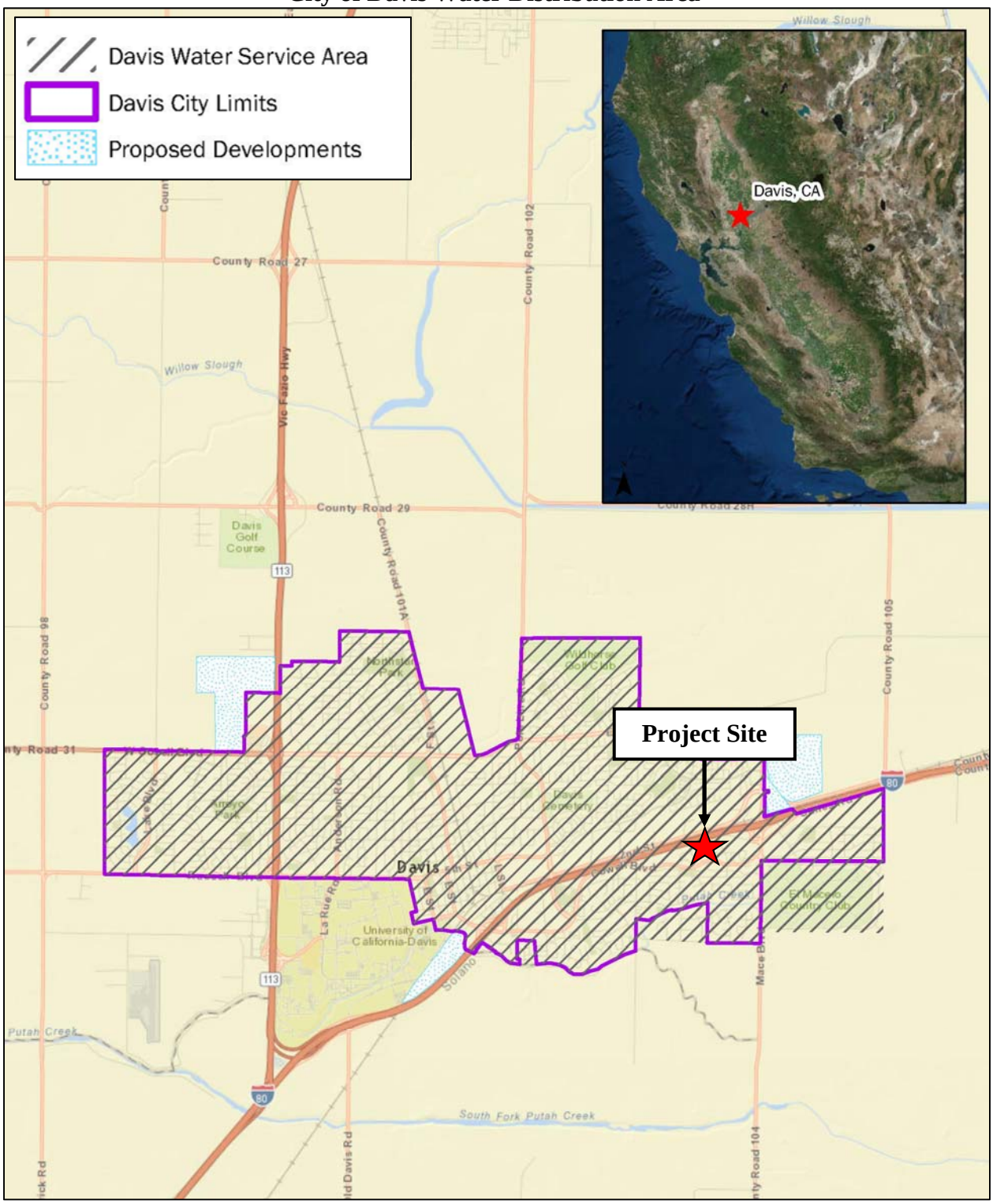
The following section describes the existing utilities, including water supply and delivery, wastewater collection and treatment, solid waste disposal, electricity and natural gas, and telecommunications in Davis.

Water Supply

The City of Davis is responsible for providing water service to all residential, commercial, industrial, institutional, and irrigation customers, as well as open space and fire protection uses within the City. The City of Davis's water system service area coincides with the Davis City Limits and additionally serves areas located outside the City's boundary, including the El Macero area, the Willowbank area, and the Royal Oak Manufactured Home Community area south of Interstate 80 (I-80) (see Figure 4.8-1). It should be noted that the City's water system service area does not include the University of California, Davis. The City's water system currently serves a population of approximately 69,280, which includes residents from the El Macero, Royal Oaks Mobile Home Park, and Willowbank areas.

1 City of Davis. *Davis General Plan.* Adopted May 2001. Amended through January 2007.
2 City of Davis. *Program EIR for the City of Davis General Plan Update and Project EIR for Establishment of a New Junior High School*. January 2000.
3 City of Davis. *Final 2015 Urban Water Management Plan.* June 2016.
4 City of Davis. *Davis Integrated Waste Management Plan*. July 2013.
5 Cunningham Engineering. *Preliminary Utility Study for 3820 Chiles Road, Davis, CA.* Revised May 22, 2018.

Figure 4.8-1
City of Davis Water Distribution Area



Source: City of Davis, Final 2015 Urban Water Management Plan, 2016.

Water supplies in the City of Davis were historically provided solely by groundwater. However, in June 2016, the City began using treated wholesale surface water from the Woodland – Davis Clean Water Agency's (WDCWA) Regional Water Treatment Facility.[6] The following section provides a discussion of both sources of water.

Groundwater

The following section provides the legislative background on groundwater within the State of California and City of Davis, as well as a description of the characteristics of the groundwater aquifers in Davis.

Background on Legislation

Despite the City's recent transition to surface water from the WDCWA as the main source of water supply, the City will continue to rely on groundwater during a transitional period, and as needed during high demand periods.[7]

The City pumps groundwater from the Yolo Basin, which is a portion of the larger Sacramento Valley groundwater basin. The Yolo Basin is subject to the 2014 Sustainable Groundwater Management Act (SGMA), which became effective January 31, 2015. The SGMA applies to the 127 High and Medium Priority groundwater basins, which account for approximately 96 percent of groundwater use in California. The Yolo subbasin is designated as High Priority under the SGMA. The SGMA requires High and Medium Priority basins under the California Statewide Groundwater Elevation Monitoring (CASGEM) program subject to critical conditions of overdraft to be managed under a groundwater sustainability plan by January 31, 2020 (Water Code § 10720.7(a) (1)), and requires all other groundwater basins designated as High or Medium Priority basins to be managed under a groundwater sustainability plan by January 31, 2022 (Water Code § 10720.7 (a) (2)). According to Bulletin 118[8] and the UWMP[9], the Yolo subbasin is not subject to critical conditions of overdraft.

The SGMA requires the formation of local groundwater sustainability agencies (GSAs) that must assess conditions in their local water basins and adopt locally-based management plans. The SGMA provides substantial time (20 years) for GSAs to implement plans and achieve long-term groundwater sustainability. The SGMA protects existing surface water and groundwater rights and does not impact current drought response measures. The City is in the planning stages to partner with other local agencies to comply with the SGMA.

6 Woodland – Davis Clean Water Agency. *Project Overview*. Available at: https://www.wdcwa.com/project-overview/. Accessed January 2018.
7 Woodland – Davis Clean Water Agency. *Introduction to Surface Water*. March 2016.
8 Department of Water Resources. *Bulletin 118* [pg. 98]. Update 2003.
9 City of Davis. *Final 2015 Urban Water Management Plan.* June 2016.

Local Groundwater Aquifer Characteristics

The City has historically obtained groundwater from both the deep and intermediate depth aquifers. The City's deep aquifer zone exists throughout the service area, and is more predominant to the north and west. The deep aquifer zone slopes downward from the west of the service area, with gradual flattening towards the east. Both the City and UC Davis primarily relied on the deep aquifer due to its generally better quality in terms of hardness and total dissolved solids compared to water produced from the intermediate depth aquifer. With the operation of the Regional Water Treatment Facility, intermediate groundwater wells will only be used as emergency supplies or as raw water for park irrigation.

The productive aquifers in the Davis area of Yolo County occur in the Tehama and younger formations. In most areas of Yolo County, the sands and gravel of the Tehama Formation are thin, discontinuous layers between silt and clay deposits. In much of the eastern portion of Yolo County, productive aquifers are found up to 700 feet below ground surface with few productive aquifers in the 700-foot to 1,000-foot depth range. In the area (especially to the west), good quality water is also found in the Tehama Formation at depths of approximately 1,200 feet to 1,500 feet.

Aquifers in the Davis area are recharged by percolation of rainfall and to a lesser extent irrigation water. Other significant sources include infiltration in streambeds, channels, and the Yolo Bypass. Relatively course-grained deposits line both Putah and Cache Creeks, allowing substantial infiltration. The deep aquifer has a much longer recharge period as compared to the intermediate depth aquifer, on the order of thousands of years versus hundreds of years, respectively.[10]

Bulletin 118 states that the Yolo Basin does not exhibit any significant declines in groundwater levels, with the exception of localized pumping depressions in several areas, including in the vicinity of Davis. Historical groundwater elevation measurements show that groundwater elevations declined through the 1950s and 1960s and then increased as a result of the implementation of the Lake Berryessa and Indian Valley Reservoir regional surface water supply projects. In addition to the groundwater elevation changes resulting from variation in land and water use practices over time, groundwater elevations have fluctuated in response to changes in precipitation. Groundwater elevations in the falls of 1977 and 1992 were near the historical lows recorded in the mid-1960s. The maximum groundwater elevation measurements were recorded in spring 1983, the same year that the maximum annual precipitation was recorded.[11]

In the vicinity of Davis and UC Davis, the base of fresh groundwater occurs at a depth of approximately 2,800 feet below mean sea level, implying that the fresh water aquifer is about 2,800 feet thick. The total amount of water contained to a depth of 2,000 feet in the 11,600-acre groundwater management plan area is estimated to be over 2 million acre feet

[10] City of Davis. *Final 2015 Urban Water Management Plan.* June 2016.
[11] City of Davis/UC Davis. *Groundwater Management Plan*. April 2006.

(ac-ft). The amount of water in storage is estimated to be approximately 120,000 ac-ft, assuming a specific yield of 10 percent.

Until the recent transition to the use of surface water, the City's groundwater supply was provided by 20 active wells located within the City's water system service area. The City's historic annual groundwater production for the potable water system, presented in units of acre feet per year (afy) is depicted in Table 4.8-1.

Table 4.8-1
Groundwater Production

	2011	2012	2013	2014	2015
Volume Pumped (afy)	11,531	12,217	12,339	10,903	9,212

Source: City of Davis. Final 2015 Urban Water Management Plan. June 2016.

With the recent availability of surface water, the City of Davis has started to reduce the total amount of groundwater used. The City has begun to retire, place on standby, and/or convert intermediate wells to non-potable service. Figure 4.8-2 presents the historical and projected future annual utilization of groundwater from the intermediate and deep aquifers. The sharp drop of projected groundwater supply depicted in Figure 4.8-2 coincides with the phase-in of wholesale surface water deliveries from the WDCWA. During periods of Term 91 curtailments, which are restrictions on surface water diversions, the groundwater supply depicted in Figure 4.8-2 could be greater than depicted.

The quantity of the City's water supply available from groundwater is not impacted by dry, average, or wet years.[12] In dry years the groundwater levels may decline, but this does not reduce the pumping capacity of the City's wells until the groundwater levels drop significantly. The City has an agreement with UC Davis to limit the maximum daily groundwater pumping capacity of the deep aquifer wells. Treatment facilities may be needed on some of the existing deep wells in the future depending on changes in groundwater quality and drinking water standards. Currently, all of the wells meet the drinking water standards.

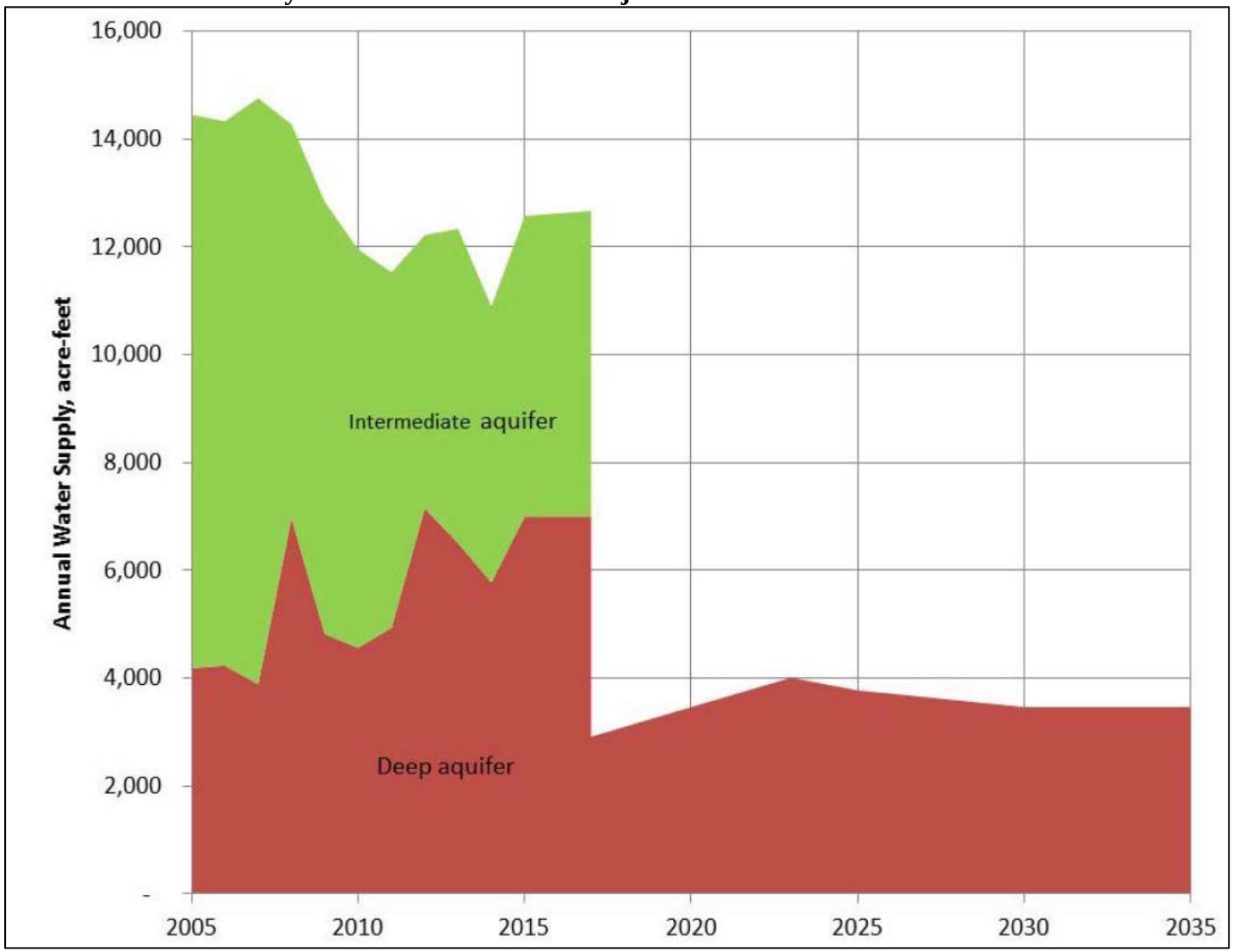
Wholesale Water Supply

The City of Davis is now under contract to purchase wholesale surface water from the WDCWA to use in combination with groundwater from the deep wells. The project participants consist of the City of Davis, City of Woodland, and UC Davis. The Regional Water Treatment Facility began operation in June 2016. Per the WDCWA, the Regional Water Treatment Facility is capable of supplying up to 30 million gallons per day (mgd) of water, with an option for future expansion to 34 mgd. Of the 34 mgd of water supplied, the City of Davis is allocated approximately 10.2 mgd.[13]

[12] Brown and Caldwell. *Water Supply Assessment for the City of Davis* [pg. 4-3]. February 2015.

[13] Woodland-Davis Clean Water Agency. *Project Overview*. Available at: https://www.wdcwa.com/project-overview/. Accessed January 2018.

Figure 4.8-2
City of Davis Historical and Projected Groundwater Utilization



Source: Brown and Caldwell, Water Supply Assessment for the City of Davis, 2015.

The WDCWA has two Sacramento River water rights, consisting of a primary water right of 45,000 afy and a secondary right of 10,000 afy. The primary water right is subject to Term 91, which can result in a curtailment of that supply. In the event of a Term 91 curtailment, the secondary water right could be used for the April to October period. When the US Bureau of Reclamation declares a Lake Shasta critical year, the secondary water right is reduced to 7,500 afy. Historically, the majority of Term 91 curtailments have been 3 months or less in duration. 2014 was unique in that it is the first year since the Term 91 regulations went into effect in 1984 that the curtailments had been in effect for most of the year. A Lake Shasta critical year has been declared in 2012, 2013, 2014, and 2015 which are four of the eight years of the occurrence of this declaration over the last 40 years.

According to the WSA,[14] the ability of the WDCWA to supply water during drought conditions concludes that 64 and 42 percent of the annual water demands of the project participants would have been met in 2013 and 2014, respectively. 2013 and 2014 represent the two most severe water right curtailment years since Term 91 went into effect in 1984. The WDCWA has the option of purchasing supplemental Sacramento River water from water rights holders not covered by Term 91. The WSA states that the two existing water rights, in combination with deep aquifer groundwater pumping by the City of Davis, an aquifer storage and recovery (ASR) program by the City of Woodland, and the option to purchase supplemental Sacramento River water, are expected to meet the anticipated water demands of all of the project participants. If implemented, an ASR program could counteract the wholesale supply reduction impacts of Term 91 curtailments.[15]

Summary of Water Supplies

The City Council decided in 2013 that the City's long-range water portfolio would consist of surface water and groundwater supplemented by well conversion/irrigation, ASR, rainwater catchment, grey water, and storm water, with water conservation to reduce demands.[16] Some of the supplies would not be implemented until sometime in the future, although the ASR option is currently being evaluated by the City and might be implemented sooner. Surface water and deep aquifer groundwater combined with water conservation comprise the majority of the supply. The analysis assumes that the City would utilize the wholesale surface water supply and the deep aquifer groundwater. The other water portfolio elements would result in very small amounts of water and is assumed that they would not be extensively used to provide more potable water supply.

The maximum annual amount of each water supply available to the City is presented in Table 4.8-2, which does not consider any limitations due to the capacities of existing water system supply facilities and infrastructure.

[14] Brown and Caldwell. *Water Supply Assessment for the City of Davis* [pg. 4-5]. February 2015.
[15] Brown and Caldwell. *Water Supply Assessment for the City of Davis* [pg. 4-5]. February 2015.
[16] Brown and Caldwell. *Water Supply Assessment for the City of Davis* [pg. 4-5]. February 2015.

Table 4.8-2
Annual Amount Under Each Water Supply Source

Supply	Contract Amount (afy)	Right	Contract
Groundwater	No Limit[1]	X	
Wholesale Surface Water	18,700[2]		X

Notes:
1 While a legal limit on annual pumping does not exist, the City has agreed with UC Davis to limit total groundwater pumping capacity.
2 Assume proportional to treatment plant capacity share. The actual amount available to the City is limited by the capacities of the supply facilities and intermittent Term 91 curtailments.

Source: Brown and Caldwell, Water Supply Assessment for the City of Davis, 2015.

The annual amounts of groundwater and wholesale surface water available to the City are limited by the capacities of the water supply infrastructure. The water supply infrastructure is sized to serve the maximum day demand. Figure 4.8-3 presents the City's historical maximum day and maximum month peaking factors.

With the recent availability of the wholesale surface water, the City has a maximum day supply capacity of 23.4 mgd, which consists of 13.2 mgd of well capacity and 10.2 mgd wholesale supply. The City would have additional groundwater supply capacity from some of the intermediate depth wells that would be kept for emergency standby purposes. The other wells are assumed not to be normally operational.

The City plans to maximize surface water use by routinely using the surface water supply as a base load and using the deep aquifer wells as a supplemental supply during the summer when demands would exceed the surface water supply capacity. The total supply that would be available from both wholesale surface water and groundwater is shown in Table 4.8-3.

Table 4.8-3
Water Supply Capacity

Water Supply	Reasonably Available Volume (afy)
Surface Water	11,246
Groundwater	14,834
Total Supply	**26,080**

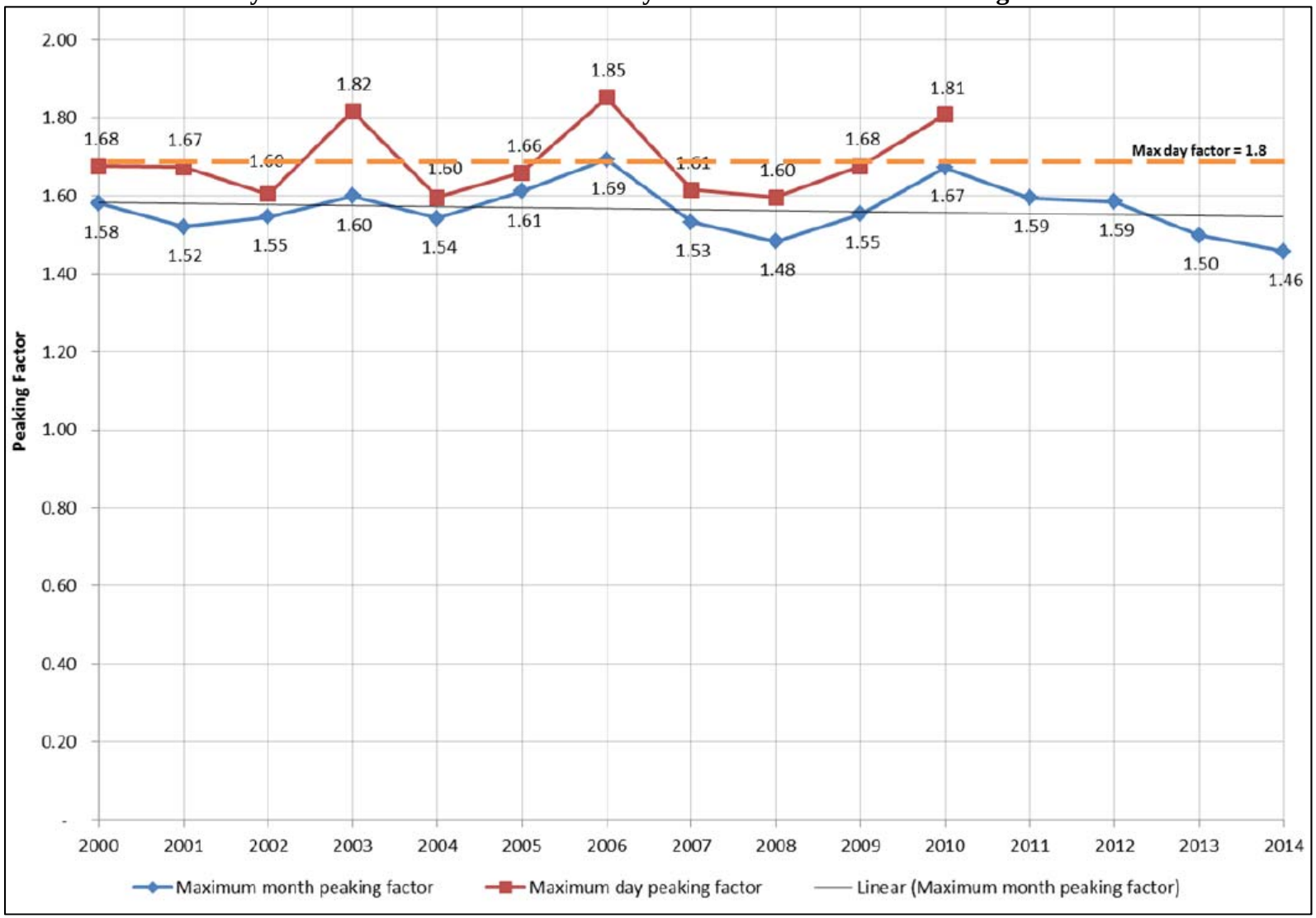
Note: Reasonably Available Volume is based on years 2020, 2025, 2030, 2035, and 2040.

Source: City of Davis, Final 2015 Urban Water Management Plan, 2016.

Projected Water Demand

The projected water demands through 2035 include the buildout demand of the City's existing water system's service area. Table 4.8-4 presents the projected future demand for water in the City. While single- and multi-family water demand is separated, the commercial, institutional, industrial and governmental water demand is presented together in the "Other" Land Use type category.

Figure 4.8-3
City of Davis Historical Maximum Day and Maximum Month Peaking Factors



Source: Brown and Caldwell, Water Supply Assessment for the City of Davis, 2015.

Table 4.8-4 Projected Water Demand				
Land Use	**Projected Water Use by Year (afy)**			
	2020	**2025**	**2030**	**2035**
Single-Family	6,420	6,374	6,169	6,169
Multi-Family	2,766	2,782	2,695	2,695
Other	2,065	2,362	2,307	2,307
Landscape	496	655	644	644
Losses	1,745	1,798	1,745	1,745
Total	**13,492**	**13,971**	**13,560**	**13,560**
Source: City of Davis, Final 2015 Urban Water Management Plan, 2016.				

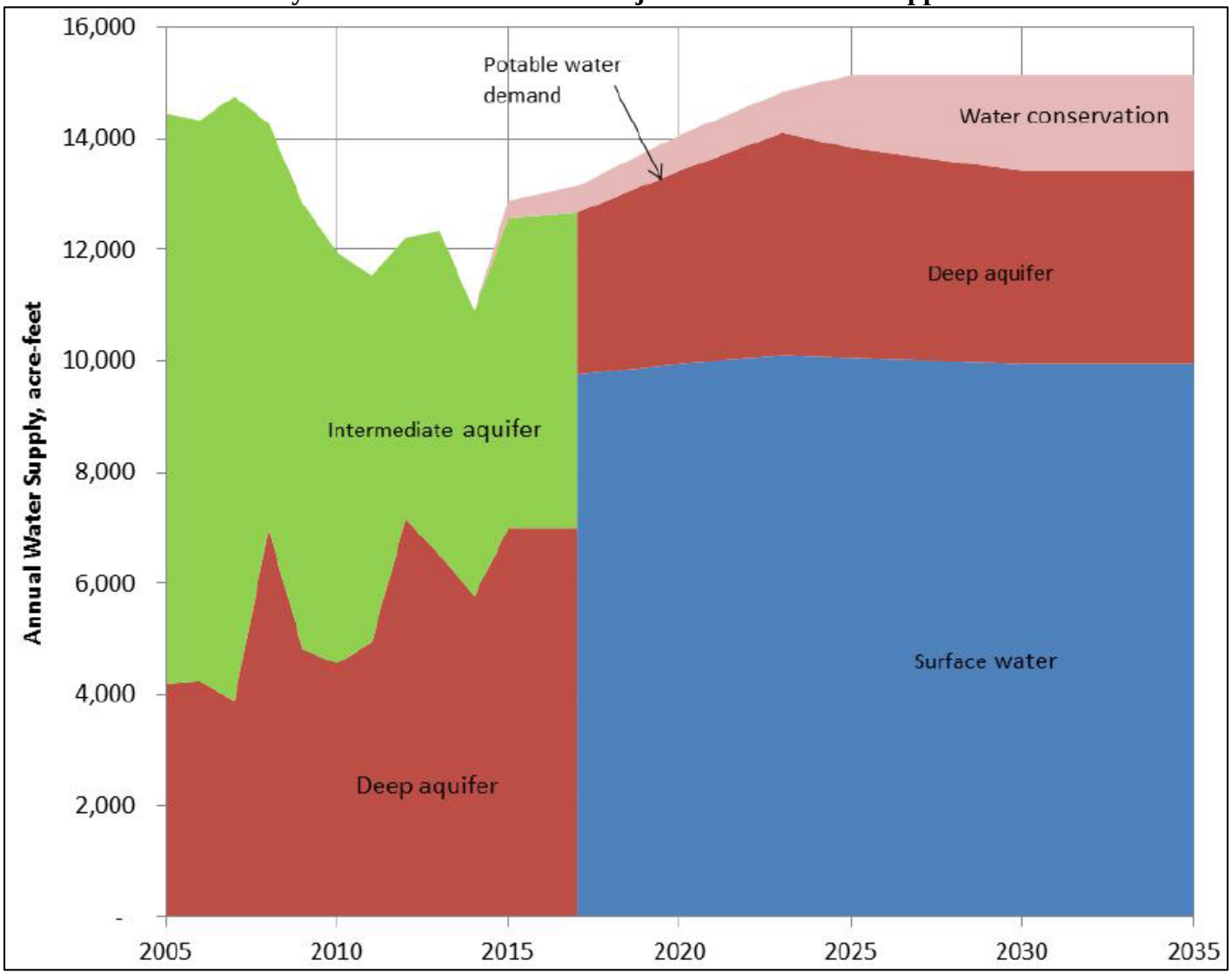
As shown in Table 4.8-4, the demand for the City is anticipated to grow between 2020 and 2025 as buildout of the City progresses. However, water demand is then expected to decline between 2025 and 2030, as water saving ordinances, codes, and standards take effect. For instance, regulations within the Model Water Efficient Landscape Ordinance, which became effective on December 1, 2015, is anticipated to reduce outdoor landscape demand in new residential projects by 20 percent, and in commercial projects by 35 percent over the previous ordinance. The effects of water conservation, the future potable water demand, and the anticipated source of water supply for the City is depicted in Figure 4.8-4.

The WSA prepared for the City concluded that the City's water supply would be sufficient to serve the City's water demand, during normal water years, under buildout conditions.[17] In the event of drought conditions, the City may experience reduced amounts of surface water availability. However, because the City will maintain deep ground water wells and emergency supply intermediate wells, the City would maintain adequate water supply to meet the maximum day demand at buildout during dry years, as shown in Table 4.8-5 below. As discussed above, citywide growth assumptions included specific large projects such as the Mace Ranch Innovation Center, the Davis Innovation Center, the Nishi project, and the Triangle.

Table 4.8-5 Projected Dry Year Supply Availability (afy)					
		2020	**2025**	**2030**	**2035**
Water Supply	Surface Water Supply	11,246	11,246	11,246	11,246
	Groundwater Supply	14,834	14,834	14,834	14,834
Total Supply		26,080	26,080	26,080	26,080
Total Demand		13,492	13,971	13,560	13,560
Surplus		**12,588**	**12,109**	**12,520**	**12,520**
Source: City of Davis, Final 2015 Urban Water Management Plan, 2016.					

[17] Brown and Caldwell. *Water Supply Assessment for the City of Davis* [p. 5-2]. February 2015.

Figure 4.8-4
City of Davis Historical and Projected Use of Water Supplies



Source: Brown and Caldwell, Water Supply Assessment for the City of Davis, 2015.

Gallons per Capita per Day Target

New requirements regarding per capita water use targets are defined in the Water Conservation Act of 2009, which was signed into law in November 2009 as part of a comprehensive water legislation package. Known as Senate Bill (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 urban water management plans the gallons per capita per day (gpcd) 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 gpcd target. Although the City's 2010 UWMP used Method 3 to calculate the gpcd targets, the City's 2015 UWMP used Method 1. Recalculation using Method 1 identified an interim target of 194 gpcd and a 2020 target of 172 gpcd. As of 2015, the City was in compliance with both stated targets with an actual gpcd of 119.[18]

Water Shortage Contingency Planning

On April 1, 2015, the Governor proclaimed a continued state of emergency directing the SWRCB to enhance emergency regulations adopted in 2014 and reaffirmed on March 17, 2015. The Governor's Executive Order B-29-15 sets 2013 as a base year and directed the SWRCB to impose restrictions to achieve a statewide 28 percent water reduction through February 28, 2016. Under the emergency regulations, the City was required to meet a mandatory reduction goal of 28 percent as compared to the base year of 2013. In response, the City enacted Stage 2.5 water restrictions through an Urgency Ordinance, adopted by the City on June 2, 2015. The Urgency Ordinance was designed to implement the State mandates and to provide for penalties and enforcement of the regulations.

The regulations correspond to Davis' 2010 Urban Water Management Plan's Stage 2/Stage 3 Water Shortage Contingency Plan and is consistent with the SWRCB's regulations previously adopted on July 15, 2014 and reaffirmed March 17, 2015.

In March 2016, the SWRCB lowered the mandatory reduction target from 28 percent to 25 percent. The City achieved a cumulative water reduction of 27.7 percent between June 2015 and March 2016, as compared to the same months in 2013. On April 7, 2017, Governor Edmund Brown Jr. issued Executive Order B-40-17, ending the drought state of emergency in most of California, including Yolo County. In addition to lifting the drought state of emergency, Executive Order B-40-17 rescinds various drought related proclamations and executive orders made in 2014 and 2015. However, to encourage continued water conservation throughout California, Executive Order B-40-17 left in place some specific requirements such as prohibiting certain wasteful water use practices and urban water use reporting requirements.

Although the City of Davis adequately responded to the most recent drought related state of emergency, in order to ensure that the City can adequately respond to future declared water shortages, the City has adopted a Water Shortage Contingency Plan (WSCP). During water

[18] City of Davis. *Final 2015 Urban Water Management Plan.* June 2016.

shortage conditions, the City Council may authorize the activation of the WSCP based on actual water supply and demand information. The WSCP includes one normal operation stage and four stages of water shortage. Each stage of shortage is defined through specific Triggering Conditions, which correspond to percent reductions in water supply. Drought stages also correspond with restriction, demand reduction measures and enforcement.[19] The restriction measures of each water shortage stage are designed to ensure that the City maintains adequate water supply to meet a minimum of 50 percent of normal supply during a severe or extended water shortage.

Water Delivery

The City of Davis' water distribution system includes three water storage tanks, 16,292 water meters, and 178 miles of water lines. The hydraulic grade in the system is based on the level in an elevated water storage tank.[20]

Storage Facilities/Booster Pump Stations

The City's water system has three storage tanks: the existing Elevated Tank, West Area Tank (WAT), and the relatively new East Area Tank (EAT). The three tanks have a combined storage of 8.2 million gallons (MG). The WAT has a booster pumping capacity of 4,200 gallons per minute (gpm) and the EAT has a total pumping capacity of 8,000 gpm. The WAT and EAT fill during off-peak demand periods, and then the booster station pumps send water back into the system during peak periods based on time and system pressure.

Pipelines

The City's water system consists of piping ranging from two to 14 inches in diameter. Approximately 90 percent of the distribution system consists of six- to 10-inch diameter pipelines. The City's pipeline system was originally constructed to support localized supply, with wells spread throughout the City, which did not require large diameter transmission mains. However, as a result of the recent changes to the City's water supply system, treated surface water from the WDCWA's Regional Water Treatment Facility is distributed to the City by way of a six-mile, 30-inch pipeline along Pole Line Road.

Water Supply Utilities within Project Site Vicinity

Currently, the City of Davis maintains eight-inch domestic water mains within La Vida Way and Chiles Road. Per a City fire flow test completed on Chiles Road on August 7, 2017, the water mains provide static pressure of 55 pounds per square inch (psi), a residual pressure of 46 psi at a flow of 1,655 gpm, and a pressure of 20 psi at a flow of 3,560 gpm.[21]

[19] City of Davis. *Final 2015 Urban Water Management Plan.* June 2016.
[20] City of Davis. *Public Works.* Available at: http://cityofdavis.org/city-hall/public-works. Accessed September 15, 2016.
[21] Cunningham Engineering. *Preliminary Utility Study for 3820 Chiles Road, Davis, CA.* October 6, 2017.

Wastewater Collection and Treatment

The City of Davis provides wastewater conveyance and treatment for all residents and businesses within the City of Davis and two unincorporated areas: North Davis Meadows (north of Davis at State Route [SR] 113 and County Road [CR] 29), and El Macero (south of Davis adjacent to the southern City boundary).

Wastewater Treatment Plant Capacity

The City of Davis was authorized by the California Regional Water Quality Board in October 2013 to discharge pursuant to Order R5-2007-0132-02 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0079049. The City of Davis submitted a Report of Waste Discharge, dated 4 April 2012, and applied for a NPDES permit renewal to discharge up to 7.5 mgd of treated wastewater from the City of Davis Wastewater Treatment Plant (WWTP). The Order will expire on November 1, 2018.

Under the Permit Order, the City has the ability to discharge treated wastewater from two different discharge points (Discharge Point Nos. 001 and 002). The treatment system for both discharge points consists of a mechanical bar screen, aerated grit tank, three primary sedimentation tanks, three facultative oxidation ponds, two aerated ponds, a polishing pond, an overland flow system, disinfection, and dechlorination. However, prior to the discharge at Discharge Point No. 002, the disinfected effluent passes through treatment wetlands. Each discharge point is located in a different receiving water. Treated wastewater is discharged from Discharge Point No. 001 to the Willow Slough Bypass, a water of the United States, and part of the Yolo Bypass flood protection structure within the Sacramento River Watershed. Treated wastewater is discharged from Discharge Point No. 002 to the Conaway Ranch Toe Drain, a water of the United States, and a part of the Yolo Bypass within the Sacramento River Watershed.

The City's WWTP has recently been upgraded to ensure compliance with all existing and anticipated wastewater discharge standards. The City's WWTP upgrade project included design and construction of improvements to the City's WWTP in order to meet State and federal regulatory discharge requirements contained in the City's adopted 2013 NPDES permit. With completion of the upgrade, the WWTP has been sized to accommodate 6.0 mgd of average dry weather flow (ADWF). ADWF is defined as the average of the three consecutive lowest-flow calendar months, which for the City usually coincides with the period of July through September. A summary of the ADWF values for the past five calendar years is presented in Table 4.8-6.

As indicated in Table 4.8-6 below, the 5-year average of ADWF values for the period of 2010–2014 is 4.34 mgd. The lowest ADWF value during that period was 3.78 mgd, measured in 2014, which is reflective of the strict water conservation measures implemented throughout the City during the severe 2014 drought conditions.

Table 4.8-6
Davis WWTP Influent ADWF and BOD Values, 2010-2014

Year	ADWF (mgd)[1]	BOD (mg/L)[2]	BOD (lbs/day)[3]	Months
2010	4.55	198	7,500	July–September
2011	4.71	205	8,100	August–October
2012	4.26	230	8,200	July–September
2013	4.42	205	7,600	July–September
2014	3.78	258	8,100	July–September
5-Year Average	**4.34**	**219**	**7,900**	-
Coefficient of variation[4]	8.2%	11.4%	4.1%	-

Notes:
1 mgd = million gallons per day
2 mg/L = milligrams per liter
3 lbs/day = pounds per day
4 Defined as the standard deviation divided by the arithmetic mean; indicates the degree of variability in the data.

Source: West Yost Associates, Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity, Technical Memorandum (Final), 2015.

Given the relatively high variability in ADWF measurements over the last five years, there is some question as to what actually represents the "current" ADWF value. Because the 2014 value was unusually low as compared to previous years, the use of the 2014 ADWF may be inappropriately low for assessing available WWTP capacity. Conversely, the inclusion of the 2014 value in a five-year average is reasonable in calculating a sufficiently robust ADWF value, given the potential for periodic drought-related water use reductions.

Based on the above considerations, the five-year average ADWF value for the period of 2010–2014 (i.e., 4.34 mgd) is assumed to represent current ADWF conditions. Growth within the City has been minor over that span, so the flow-generating land uses within the City have remained relatively constant during that period. Given an ADWF of 4.34 mgd and a WWTP capacity of 6.0 mgd, West Yost has estimated that the available ADWF capacity of the WWTP is 1.66 mgd, or 28 percent of design capacity.[22]

Wastewater Collection System

The City of Davis wastewater collection system conveys wastewater for the area within the City limits to the Wastewater Treatment Plant (WWTP), located at 45400 CR 28H. The collection system includes 156 miles of sewer pipelines ranging in diameter from six inches to 66 inches. In addition, the City has six sewer lift stations within the service area to facilitate the flow of wastewater to the WWTP.[23]

The City also provides sewer collection services to El Macero and North Davis Meadows. The City has an agreement to provide the same level of service to the El Macero District as within the

[22] West Yost Associates. *Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity [pg. 4]*. Technical Memorandum (Final). April 2, 2015.
[23] City of Davis. *Sewer System Management Plan.* August 2012.

City. The City service and obligation to North Davis Meadows is limited to repairing the low-pressure line. Yolo County provides North Davis Meadows pump station maintenance services.

Wastewater Collection System Facilities in Project Site Vicinity

Currently, the City maintains an existing six- to eight-inch sanitary sewer main located to the west of the proposed project site in La Vida Way. A six-inch sewer line extends eastward from the sewer main into the proposed project site near the intersection of La Vida Way and El Segundo Avenue.

Solid Waste Disposal

Solid waste collection and disposal in the City of Davis is provided by Recology Davis, which was recently renamed from Davis Waste Removal (DWR). Recology Davis has a drop-off and buy-back center and provides residential curbside, apartment, and business collection services. In addition to the weekly garbage service, DWR provides green waste and recycling pickup and street sweeping service. Recoverable items include mixed paper, glass, aluminum cans, steel and tin cans, some plastics, corrugated cardboard, yard waste, and used motor oil. In July of 2016, Recology Davis began an organics collection program to allow for collection of organic material and food waste. The program will help achieve the City's goal of diverting waste sufficient to reduce City-wide waste disposal to 1.9 pounds per person per day by the year 2020 and close to zero pounds per person per day by year 2025.

All non-recyclable, non-organic waste generated by the City of Davis is disposed of at the 770-acre Yolo County Central Landfill, which is located off CR 28H, near its intersection with CR 104. The landfill is owned and operated by the Yolo County Department of Public Works and Transportation. According to the City of Davis Integrated Waste Management Plan, the landfill is not operating at capacity and has a current anticipated closure date of 2124.[24] Under the landfill's existing permit, the facility is allowed to receive up to 1,800 tons per day, 299 days a year. The landfill also includes a recycling drop-off facility, a wood processing facility, and a methane gas collection facility, and accepts drop-offs of household hazardous waste at no charge to County residents on designated Saturdays throughout the year.

Electricity and Natural Gas

Gas and electric service in the City of Davis has been historically provided by Pacific Gas & Electric (PG&E) under a franchise granted to PG&E by the City. Based in San Francisco, PG&E is the largest provider of gas and electric services in northern and central California. PG&E provides electricity to roughly 5.1 million customers and provides natural gas to nearly 4.2 million customers. A mix of generating sources, including hydropower, gas-fired steam and nuclear energy, powers the electric system. Existing on-site electrical infrastructure includes a pad-mounted transformer and various electrical cabinets located within an enclosure to the east of the existing 53,248-square foot (sf) building.

[24] CalRecycle. *Solid Waste Facility Permit; Facility Number: 57-AA-001*. May 31, 2018.

It should be noted that on October 25, 2016, the Davis City Council adopted Resolution Number 16-153, Series 2016, which approved the Joint Exercise of Powers Agreement with Yolo County to form the Valley Clean Energy Alliance, which is now referred to as simply Valley Clean Energy (VCE). The resolution adopted by the City, along with similar resolutions adopted by the City of Woodland and Yolo County led to the formation of the VCE joint powers authority. Beginning in June 2018, the VCE began serving the electricity needs of the Cities of Woodland, Davis, and unincorporated areas of Yolo County. Customers within the participating areas have the opportunity to continue receiving service from PG&E or receive energy from VCE. While VCE supplies the energy for customers enrolled in the VCE program, VCE electricity is transmitted through PG&E-owned and operated distribution and power lines.

Telecommunications

Residents in Davis subscribe to a mix of wireline providers and resellers including AT&T of California, Comcast, Omsoft, and Davis Community Network. A few businesses also utilize fixed wireless providers, including DigitalPath, Inc. and Winters Broadband.

The City currently maintains fiber-optic connectivity between its major sites as part of its renewed cable services Franchise Agreement with Comcast, Davis' local cable provider. The franchise agreement was renewed on October 1, 2005 and expires on September 30, 2018. The Franchise Agreement details the services, terms, conditions and payments that will be made between the City of Davis and Comcast. As part of the negotiated agreement, Comcast has provided 6-strands of fiber to 22 "Major Facilities" throughout the City. It also connects three Yolo County facilities that are within the City of Davis, which provides interconnection with the greater Yolo County fiber network. The Comcast network, known as the "I-Net" or Institutional Network, enables the City to provide connectivity for municipal operations, utilities, public safety, and general administration.[25]

4.8.3 REGULATORY CONTEXT

The following discussion contains a summary review of regulatory controls pertaining to utilities and service systems, including federal, State, and local laws and ordinances.

Federal Regulations

The following are the federal environmental laws and policies relevant to utilities and service systems.

Safe Drinking Water Act (SDWA)

The federal SDWA, which was enacted in 1974, gives the United States Environmental Protection Agency (EPA) the authority to set standards for contaminants in drinking water supplies. The EPA was required to establish primary regulations for the control of contaminants that affected public health and secondary regulations for compounds that affect the taste, odor, and aesthetics of

[25] Magellan Advisors, LLC. *Final Yolo Broadband Strategic Plan*. March 26, 2015.

drinking water. Accordingly, the EPA set a maximum contaminant level or treatment technique for each of the 83 contaminants in drinking water listed in the SDWA. Under the provisions of SDWA, the California Department of Health Services (DHS) has the primary enforcement responsibility. Title 22 of the California Administrative Code establishes DHS authority, and stipulates State drinking water quality and monitoring standards.

State Regulations

The following are the State environmental laws and policies relevant to utilities and service systems.

Senate Bill 7

On September 25, 2016, SB 7 was signed into law. The purpose of SB 7 is to further the State's water conservation efforts by requiring that new apartment buildings constructed after January 1, 2018 include submeters for every rental unit. Specifically, the bill would authorize the Department of Housing and Community Development to develop, and propose for adoption, building standards that require the installation of water meters or submeters in multi-family residential buildings. In addition, if submeters are used to charge tenants separately for water use, SB 7 imposes requirements on landlords relating to submetered water service to individual dwelling units.

Senate Bill 610

The California Water Code requires coordination between land use lead agencies and public water purveyors. The purpose of this coordination is to ensure that prudent water supply planning has been conducted and that planned water supplies are adequate to meet both existing demands and the demands of planned development.

Water Code Sections 10910 – 10915 (inclusive), sometimes referred to as SB 610, require land use lead agencies: 1) to identify the responsible public water purveyor for a proposed development project, and 2) to request from the responsible purveyor, a "Water Supply Assessment" (WSA). The purposes of the WSA are (a) to describe the sufficiency of the purveyors' water supplies to satisfy the water demands of the proposed development project, while still meeting the current and projected water demands of customers, and, (b) in the absence of a currently sufficient supply to describe the purveyor's plans for acquiring additional water. Water Code Sections 10910 - 10915 delineate the specific information that must be included in the WSA.

As stated in CEQA Guidelines Section 15155, which reflects SB 610 requirements, any residential development exceeding 500 dwelling units is considered a "water-demand project" and is required to prepare a WSA. The proposed project includes up to 225 dwelling units, which is below the threshold established by SB 610. Thus, a WSA is not required to be prepared for the proposed project.

Water Conservation in Landscaping Act of 2006

The Water Conservation in Landscaping Act of 2006 (Assembly Bill [AB] 1881) enacts many, but not all of the recommendations reported to the Governor and Legislature in December 2005 by the CUWCC Landscape Task Force. AB 1881 requires DWR, not later than January 1, 2009, by regulation, to update the model ordinance in accordance with specified requirements, reflecting the provisions of AB 2717. AB 1881 requires local agencies, not later January 1, 2010, to adopt the updated model ordinance or equivalent or it will be automatically adopted by statute. The bill also requires the Energy Commission, in consultation with the department, to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Sustainable Groundwater Management Act

The DWR has developed a Strategic Plan for its Sustainable Groundwater Management (SGM) Program. DWR's SGM Program will implement the new and expanded responsibilities identified in the 2014 Sustainable Groundwater Management Act (SGMA). The expanded responsibilities include the following:

1) Developing regulations to revise groundwater basin boundaries;
2) Adopting regulations for evaluating and implementing Groundwater Sustainability Plans (GSPs) and coordination agreements;
3) Identifying basins subject to critical conditions of overdraft;
4) Identifying water available for groundwater replenishment; and
5) Publishing best management practices for the sustainable management of groundwater.

California Integrated Waste Management Act—Assembly Bill 939

To minimize the amount of solid waste that must be disposed of by transformation (i.e., recycling) and land disposal, the State Legislature passed the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all cities and counties are required to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000. Solid waste plans are required to explain how each city's AB 939 plan will be integrated within the respective county plan. The plans must promote (in order of priority) source reduction, recycling and composting, and environmentally safe transformation and land disposal. Cities and counties that do not meet this mandate are subject to $10,000-per-day fines.

Senate Bill 1016

In 2007, SB 1016 amended portions of AB 939, which allows the California Integrated Waste Management Board (CIWMB) to use per capita disposal as an indicator in evaluating compliance with the requirements of AB 939. Jurisdictions track and report their per capita disposal rates to CalRecycle.

Solid Waste Reuse and Recycling Access Act – Assembly Bill 1327

The Solid Waste Reuse and Recycling Access Act (AB 1327) requires jurisdictions to adopt ordinances requiring development projects to provide adequate storage area for collection and removal of recyclable materials.

Local Regulations and Policies

The following are applicable local regulations relevant to utilities and service systems.

City of Davis General Plan

The following applicable goals related to Utilities and Service Systems are from the Water; Materials, Solid Waste and Recycling; and Computers and Telecommunications sections of the City's General Plan.

Goal WATER 1 Minimize increases in water use. Reduce per capita water consumption by 20 percent as compared to historic use through programs encouraging water conservation.

Policy WATER 1.1 Give Priority to demand reduction and conservation over additional water resource development.

Standard 1.1a: Water conserving plumbing is required in all new residential construction as required per state legislation.

Policy WATER 1.2 Require water conserving landscaping.

Standard 1.2b: Developers and builders shall install water-conserving landscaping and irrigation systems in accordance with the City's water conservation in landscaping requirements. Provide homeowners information on water conserving landscaping and irrigation systems, if not provided in construction.

Policy WATER 1.3 Do not approve future development within the City unless an adequate supply of quality water is available or will be developed prior to occupancy.

Goal WATER 5 Remain within the capacity of the City wastewater treatment plant.

Policy WATER 5.1 Evaluate the wastewater production of new large scale development prior to approval to ensure that it will fall within the capacity of the plant.

Policy WATER 5.2 Provided that the existing plant capacity is not exceeded, require new large scale development to pay its fair share of the cost of extending sewer service to the site.

Goal MAT 1 Enhance the quality of the environment by conserving resources and minimizing waste by reducing, reusing, recycling, and re-buying.

Policy MAT 1.1 Promote reduced consumption of non-renewable resource.

Standard 1.1a: Coordinate with Yolo County Central Landfill to encourage the reuse of materials deposited at the landfill.

Standard 1.1b: Encourage reuse of refillable bottles.

Goal C&T 1 Encourage development of infrastructure and service to allow all who live, work and study in Davis to utilize new technologies to communicate with individuals and institutions, regionally, nationally, and globally.

Standard 1.1a: New residential and commercial development projects should include the infrastructure components necessary to support modern communication technologies such as conduit space within joint utility trenches for future high speed data equipment and flexible telephone conduit to allow for easy retrofit for high speed data systems.

<u>South Davis Specific Plan</u>

Wastewater Facilities

Goal: Ensure that South Davis has adequate wastewater facilities.

Objective: Maintain quality wastewater treatment standards, and prevent facilities from exceeding the City treatment capacity.

Policies:

- Construct 2 new pump stations to meet demands of new development.

- Increase the capacity of the City's wastewater treatment plant consistent with the standards prescribed by the current General Plan revision process. A major pump station upgrade is potentially required.

Water

Goal: Ensure that South Davis has an adequate water supply and quality.

Objective: Maintain City standards for water supply and quality.

Policies:
- The City must drill at least two additional water wells.
- Continue City standards for water conservation.
- Consider the improvement of water supply and quality through policies to be prescribed by the current General Plan revision process.

Solid Waste

Goal: Ensure that South Davis has an adequate solid waste services.

Objective: Maintain City standards for solid waste disposal.

Policies:
- Extend solid waste disposal services to areas of new development.
- Continue and enhance City policies regarding recycling of solid waste.

City of Davis 2015 Urban Water Management Plan

In June 2016, the City of Davis prepared the UWMP, as required by the Urban Water Management Planning Act of 1983. The focus of the 2015 UWMP is the conversion of City water supply from historic use of groundwater to the recently available surface water through from the Woodland Davis Water Project. The UWMP also discusses the conservation and efficient use of water in the Davis service area, and the development and implementation of plans to assure reliable water service in the future. The UWMP contains projections for future water use, discusses the reliability of the City's water supply, describes the City's water treatment system, and contains a water shortage contingency plan. In addition, the UWMP contains best management practices for efficient water use.

Davis Municipal Code

The Davis Municipal Code ordinances related to utilities and service systems that are applicable to the proposed project are presented below.

Article 40.42 Water Efficient Landscaping

The purpose of the landscaping standards contained in this article is to comply with the Water Conservation in Landscaping Act of 2006, Government Code Sections 65591 et. seq. and to establish standards and procedures that promote the design, installation and management of water efficient landscaping.

Chapter 32 Management of Garbage, Other Wastes, Recyclables, and Fees Therefor

City of Davis' Municipal Code contains various requirements and standards for existing developments and proposed projects in regards to solid waste. Chapter 32 includes specific regulations for the provision of garbage, waste, organics and recyclable collection in communally serviced residential developments of more than ten units. Additionally, Chapter 32 establishes requirements for the diversion of construction and demolition debris, which includes requiring construction projects to provide proof of diversions.

4.8.4 IMPACTS AND MITIGATION MEASURES

The section below describes the standards of significance and methodology utilized to analyze and determine the proposed project's potential project-specific impacts related to utilities and service systems. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

In accordance with Appendix G of the CEQA Guidelines and the City's General Plan, impact determinations regarding utilities and service systems require consideration as to whether the proposed project would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs;
- Fail to comply with federal, state, and local statutes and regulations related to solid waste;
- Result in significant adverse impacts related to project energy requirements; or

- Require or result in the construction of new telecommunication infrastructure, the construction of which could cause significant environmental effects.

It should be noted that the proposed project's potential impacts associated with stormwater drainage facilities are addressed in Section 4.4, Hydrology and Water Quality, of this EIR.

Method of Analysis

The Preliminary Utility Study prepared for the proposed project includes detailed calculations quantifying the proposed project's utility demands. It should be noted that the Preliminary Utility Study focuses on the Preferred Site Plan. According to Cunningham Engineering, the analysis for the Preferred Site Plan generally translates to the site plan for Alternative B as well.[26]

The Utility Study uses a population factor of 2.44 persons per rental unit. This is a conservative factor for the proposed project given the unit mix and the anticipated demographic. As shown in Appendix A of the Utility Study, a factor of approximately 2.0 is anticipated to be more representative of the project.

Water Demand

Domestic water demand of the proposed project was calculated by Cunningham Engineering using an average day demand (ADD) rate of 57 gallons per day per capita (gpcd), which was originally developed by Brown and Caldwell in a 2015 Water Supply Assessment conducted for the City.[27] The ADD estimate reflects the flows typically generated by efficient, low-flow fixtures required by the current plumbing code. Fire flow demand associated with the proposed project was determined based on building information provided by the project applicant on September 26, 2017. Existing fire flows were based on a City fire flow test completed at Chiles Road on August 7, 2017.

Wastewater Collection

The Preliminary Utility Study prepared for the proposed project evaluated potential wastewater generation associated with the project, as well as the capacity of downstream wastewater conveyance infrastructure.

Per the Preliminary Sewer Study, sewer demands associated with the proposed residential development were conservatively assumed to be equivalent to indoor water use estimates. Wastewater generation for *existing* residential and commercial development within the project vicinity was estimated using information provided by the City's Department of Public Works based on influent measurements at the WWTP. Based on the influent measurements, the domestic sewer residential unit generation rate was determined to be 65 gpcd. Wastewater generation rates

[26] Panagopoulos, Andi, Project Planning Manager, Cunningham Engineering. Personal Communication [email] with Nick Pappani, Vice President, Raney Planning & Management, Inc. May 15, 2018.

[27] Brown and Caldwell. *Water Supply Assessment for the City of Davis.* February 2015.

for the existing commercial uses east of the project site were estimated using the City of Davis' *Sewer Management Plan*[28] for a wastewater generation rate of 15 gallons of wastewater per day per employee (gpd/employee), with one employee for every 250 square feet of building space. The retail/commercial FAR is 0.25.

Solid Waste

Solid waste generated by the proposed project was estimated and considered with respect to the anticipated capacity at the solid waste facilities that would serve the proposed project. Sources of solid waste generation for the proposed project include demolition waste, construction material waste, and waste associated with long-term occupation of the proposed residences.

Gas and Electric Facilities

The gas and electric discussion considers the ability for existing infrastructure to be extended to the project site. Gas and electricity demands for the project are estimated and provided separately in Section 4.3, Greenhouse Gas Emissions and Energy, of this EIR.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above.

4.8-1 Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed. Based on the analysis below, the impact is *less than significant.*

The Preferred Site Plan would include a total of 225 rental units. Based on a Citywide average of 2.44 persons per household for renter-occupied units, the Preferred Site Plan would house approximately 540 future residents. Assuming an average water consumption of 57 gallons per person per day, indoor water use associated with the proposed project would be approximately 31,293 gpd with a peak hour demand of approximately 39.1 gallons per minute (gpm). The estimated peak hour landscape irrigation application rate for the proposed project would be approximately 30.3 gpm. Overall, the combined average domestic water demand associated with the proposed project would be approximately 38,568 gpd, or 14.07 mgy, with a peak hour demand of 69.4 gpm. Because the Alternative B includes fewer residential units than the Preferred Site Plan, water demands associated with Alternative B would be slightly lower.

The City's existing water supplies and projected water demands are anticipated to result in annual water surpluses as shown in Table 4.8-7 below.

[28] City of Davis. *Sewer System Management Plan*. August 2012.

Table 4.8-7 Projected Normal Year Supply Availability (mgy)				
	2020	**2025**	**2030**	**2035**
Total Supply	7,296	7,296	7,296	7,296
Total Demand	4,396	4,552	4,419	4,419
Surplus	**2,900**	**2,744**	**2,877**	**2,877**
Source: City of Davis, Final 2015 Urban Water Management Plan, 2016.				

The demand figures included in Table 4.8-7 were generated using buildout information for the City, which includes general development within the City, as well as potential development of the Mace Ranch Innovation Center and Nishi projects.[29] The buildout demand also includes the formerly proposed Davis Innovation Center. Operation of the proposed project would result in an average yearly water demand of up to 14.07 mgy. Given the City's surplus of at least 2,744 mgy, the City's current water supply could accommodate the proposed project's operational water demand. In addition, as shown in Table 4.8-8 below, sufficient water supply would exist to serve the proposed project's operational water demand during multiple dry years.

Table 4.8-8 Projected Multiple Dry Year Supply Availability (mgy)				
	2020	**2025**	**2030**	**2035**
First Dry Year				
Total Supply	7,602	7,602	7,602	7,602
Total Demand	4,396	4,552	4,419	4,419
Supply Minus Demand	**2,900**	**3,050**	**3,183**	**3,183**
Second Dry Year				
Total Supply	7,266	7,266	7,266	7,266
Total Demand	4,396	4,552	4,419	4,419
Supply Minus Demand	**2,870**	**2,714**	**2,847**	**2,847**
Third Dry Year				
Total Supply	7,296	7,296	7,296	7,296
Total Demand	4,396	4,552	4,419	4,419
Supply Minus Demand	**2,900**	**2,744**	**2,877**	**2,877**
Source: City of Davis, Final 2015 Urban Water Management Plan, 2016.				

Conclusion

Based on the above analysis, expansion of existing or construction of new water facilities, or new entitlements to serve the proposed development would not be necessary. Therefore, the proposed project would result in a ***less-than-significant*** impact related to water supply.

Mitigation Measure(s)
None required.

[29] City of Davis. *Final 2015 Urban Water Management Plan* [p. 3-1]. June 2016.

4.8-2 Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board or result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. Based on the analysis below, the impact is *less than significant.*

Per the Preliminary Utility Study, wastewater generation associated with the proposed project was assumed to be equivalent to indoor water use. Thus, based on the water demand estimates discussed under Impact 4.8-2 below for the Preferred Site Plan, the proposed project would generate up to 31,293 gallons per day (gpd) of wastewater, or 0.031 mgd. Using the City's standard peaking factor and inflow and infiltration rate, peak wet weather flow (PWWF) associated with the Preferred Site Plan would be approximately 0.096. Alternative B would include fewer residential units than the Preferred Site Plan and, thus, would result in slightly reduced wastewater generation relative to the Preferred Site Plan.

Wastewater treatment for the proposed project would be provided by the City's WWTP. As discussed previously, given an existing average ADWF of 4.34 mgd and a WWTP capacity of 6.0 mgd, West Yost has estimated that the available ADWF capacity of the WWTP is 1.66 mgd, or 28 percent of design capacity.[30] Therefore, adequate capacity exists to treat the 0.031 mgd of wastewater that would be generated by the proposed project under the Preferred Site Plan. Furthermore, the project applicant would be required to pay sewer impact fees to the City, which would contribute towards the cost of future upgrades of the City's wastewater collection system and WWTP.

Based on the above, neither the Preferred Site Plan nor Alternative B would exceed wastewater treatment requirements of the RWQCB or result in a determination by the City of Davis that inadequate capacity is available to serve the project's projected demand in addition to the provider's existing commitments. Thus, a ***less-than-significant*** impact would occur.

Mitigation Measure(s)
None required.

4.8-3 Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Based on the analysis below, the impact is *less than significant.*

The potential impacts resulting from the development of the proposed project relating to water supply and wastewater infrastructure are discussed below.

[30] West Yost Associates. *Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity [pg. 4]*. Technical Memorandum (Final). April 2, 2015.

Water Supply Conveyance Infrastructure

Domestic and fire water connections would be provided at two locations on the site: 1) at the existing eight-inch water main in Chiles Road; and 2) at the existing eight-inch water main in La Vida Way. The supply for fire water would be looped through the parking lot, around the south side of the proposed buildings. According to Cunningham Engineering, the calculated fire flow at the proposed residential buildings would be approximately 2,000 gpm (accounting for a 75 percent reduction for fire sprinklers as allowed by the Fire Code, pending approval from the Fire Marshal). Fire flow plus maximum day demand would be approximately 2,022 gpm. As described in the Methods section, these estimates are anticipated to be overly conservative for the proposed project.

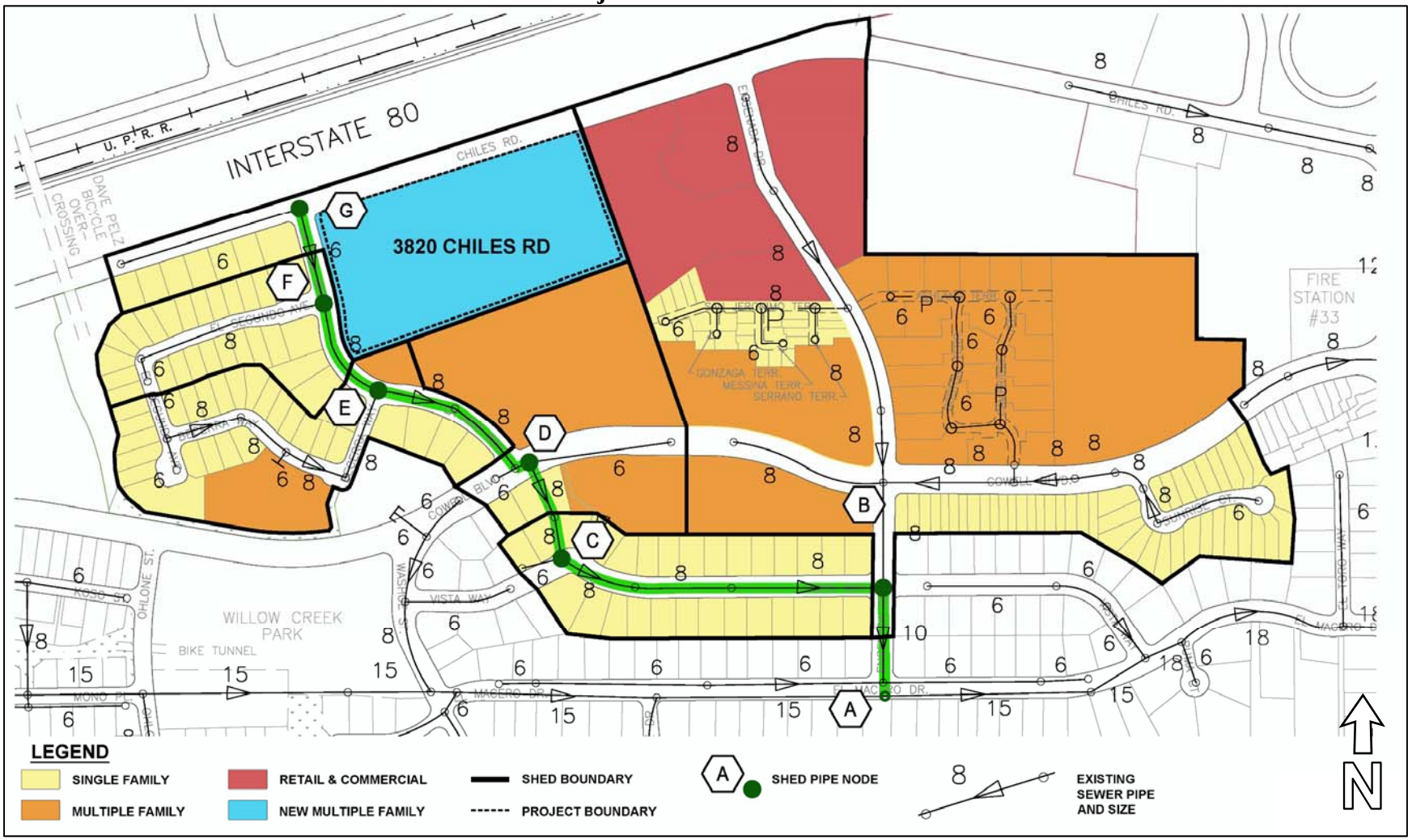
As noted previously, the existing water line to which the project would connect provides 20 psi of pressure at a flow of 3,560 gpm. As such, pressure during a 2,014 gpm fire flow event associated with the proposed project would exceed the minimum allowable pressure of 20 psi required per the 2016 California Fire Code. Therefore, the City's existing water supply infrastructure would be capable of supplying adequate pressure to the project site during average daily demand, maximum daily demand, and fire flow conditions.

Wastewater Conveyance Infrastructure

Wastewater service to the site would be provided by the City by way of a new connection to the City's existing six- to eight-inch sewer mains located in La Vida Way. The connection would be made at a single point on the existing 6-inch wastewater main, and would connect to project infrastructure near the midpoint or ends of the proposed buildings. The existing six-inch sewer stub located along the project frontage at La Vida Way, across from El Segundo Avenue, would be used as the project point of connection, provided that the location and depth are adequate to serve the proposed project. The existing on-site sewer infrastructure would be demolished.

Cunningham Engineering analyzed the capacity of the existing sewer line in La Vida Way, as well as the sewer line links within the surrounding sewer shed (see Figure 4.8-5). As discussed under Impact 4.12-5, the existing collection system infrastructure in the project area is adequately sized to accommodate foreseeable cumulative development associated with buildout of the General Plan, as well as the proposed project, in the project's sewer shed area. Considering that the proposed project's increased wastewater generation would constitute a small portion of the sewer shed's cumulative wastewater generation, and the cumulative growth could be accommodated by the existing infrastructure, the increased wastewater generation attributable to the proposed project alone would not exceed the current capacity of existing wastewater infrastructure in the project sewer shed or other downstream sheds.

Figure 4.8-5
Project Area Sewer Sheds



Source: Cunningham Engineering, 2017.

Conclusion

As discussed above, the City's existing water delivery and wastewater collection infrastructure systems would be able to accommodate increased demands associated with the proposed project. Therefore, the proposed project would result in a ***less-than-significant*** impact related requiring or resulting in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects

Mitigation Measure(s)
None required.

4.8-4 Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs or fail to comply with federal, state, and local statutes and regulations related to solid waste. Based on the analysis below, the impact is *less than significant*.

Solid waste services (collection and recycling) are provided to the City of Davis by Recology Davis, a private firm under contract with the City. All non-recyclable wastes collected from the City are disposed of at the 770-acre Yolo County Central Landfill in the northeast portion of the Davis Planning Area. The City does not contain any special landfill sites.

According to the *Davis Integrated Waste Management Plan*, the Yolo County Central Landfill is not operating at capacity and has a current anticipated closure date of 2124. The Yolo County Central Landfill is permitted to accept a maximum of 1,800 tons of waste per day; in 2013 the landfill was averaging about 1,000 tons of waste per day.[31] Over a 299-day service year, the landfill is therefore authorized to accept 538,200 tons of waste per year while accepting an average of 299,000 tons of waste per year. As a result, the Yolo County Central Landfill has a remaining daily capacity of 800 tons per day and 239,200 tons per year.

The proposed project would involve the demolition of a two-story 53,248-sf office building and the subsequent construction of either: (A) 225 multi-family residential units with a total building area (not including garages and decks) of approximately 262,965 sf (Preferred Site Plan); or (B) 188 multi-family units and five single-family residences ranging from 2,000 to 2,300 sf (Alternative B). Given that the Preferred Site Plan would include a greater number of residential units compared to Alternative B, the following discussion of solid waste generation focuses on the Preferred Site Plan in order to provide a conservative analysis.

The U.S. EPA's report, *Estimating 2003 Building-Related Construction and Demolition Materials Amounts*, was used to estimate the amount of waste that would be generated by

[31] City of Davis. *Davis Integrated Waste Management Plan*. July 2013.

construction activities. Per the report, non-residential demolition generates an average of 158 lbs/sf of solid waste and residential construction activities generate an average of 4.39 lbs/sf of waste.[32] As such, demolition of the existing 53,248-sf commercial structure located on the project site would produce approximately 8,413,184 lbs (4,207 tons) of demolition waste. In addition, assuming construction of 262,965 sf of residential structures, the proposed project would produce 1,154,416 lbs (577 tons) of construction waste. Thus, a total of 4,784 tons of construction and demolition waste would be generated by the proposed project.

The construction and demolition debris estimate presented above represents a conservative analysis of the maximum potential waste production from the construction and demolition process. The City of Davis has adopted Tier 1 of the California Green Building Standards Code, which requires applicable projects to divert at least 65 percent of all construction and demolition debris through recycling, reuse and/or waste reduction. As such, a minimum of 3,110 tons of waste would be diverted away from landfill disposal during construction and demolition. Considering the applicable CALGreen Code requirements, buildout of the proposed project would be anticipated to produce 1,674 tons of waste.

Waste generated by the demolition and construction phase of the proposed project would be spread over the anticipated year and a half construction phase. However, in order to provide a conservative analysis, the total estimated waste that would be generated by construction and demolition activities was assumed to occur during only one year. Therefore, the project's anticipated total construction waste of 1,674 tons was compared to the Yolo County Central Landfill's total yearly capacity and remaining yearly capacity. With the conservative assumption that construction waste occurs in a single year, the estimated waste generation would equal approximately 0.70 percent of the Landfill's total remaining yearly capacity. Thus, construction waste associated with the proposed project could be accommodated by the Yolo County Central Landfill.

Once constructed, residents living at the proposed project site would generate solid waste. The City of Davis estimates that residents of the City produced approximately 2.6 pounds of waste per resident per day in 2013.[33] Given that the Preferred Site Plan would house approximately 549 future residents, operation of the proposed project would generate approximately 1,427 lbs of waste per day (0.714 tons), or approximately 261 tons of waste per year. Operational waste generation of 0.714 tons per day would equal approximately 0.04 percent of the Yolo County Central Landfill's total daily capacity, and 0.09 percent of the landfill's remaining daily capacity. Over the course of an operational year, 261 tons would represent 0.05 percent of the Landfill's total annual capacity and 0.1 percent of the Landfill's remaining capacity. Therefore, the proposed project's operational waste generation could be accommodated by the existing capacity of the Yolo County Central Landfill.

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[32] U.S. Environmental Protection Agency. *Estimating 2003 Building-Related Construction and Demolition Materials Amounts.* 2009.

[33] City of Davis. *Davis Integrated Waste Management Plan*. July 2013.

It should be noted that in 2016, California achieved a Statewide residential waste diversion rate of 61 percent.[34] The diversion rate represents the percentage of the State's solid waste stream that is diverted from landfills and recycled or composted. Assuming a similar diversion rate for the City of Davis, approximately 159 tons of waste generated by operation of the proposed project would be diverted from the Yolo County Central Landfill. Moreover, in 2011 the City of Davis adopted Resolution Number 11-185, which established a goal of reducing per resident waste generation to 1.9 pounds per resident per day by 2020. Such a reduction would represent a 0.7 pounds per resident per day reduction in solid waste production from the 2013 level assumed for this analysis. To achieve the aforementioned waste reduction, the City implemented an organics program to collect yard waste, food scraps, and food soiled paper for composting. Food scraps, food soiled paper and non-recyclable organic materials comprise over 30 percent of the City's existing waste stream; therefore, the operational waste presented above could be reduced by as much as 30 percent due to the project's operational participation in the City's organics program. Thus, the waste estimations presented above should be considered conservative, and the actual waste produced by construction and operation of the proposed project would likely be less than what is presented in this EIR.

Based on the above, the proposed project would not exceed the permitted capacity of the Yolo County Central Landfill in the project's construction and/or operational phases. Additionally, the proposed project would be required to abide by all aforementioned local, State, and federal regulations. As a result, the proposed project would be serviced by a landfill with adequate capacity and would not violate any relevant statutes related to solid waste disposal. Therefore, a ***less-than-significant*** impact related to solid waste would occur.

Mitigation Measure(s)
None required.

4.8-5 Gas, electric, and telecommunication facilities. Based on the analysis below, the impact is *less than significant.*

The proposed project site currently receives gas and electric service from PG&E, and would continue to be served by PG&E upon development of the proposed project. In addition, future residents would have the option to receive electricity through the City's new VCE program, under which electricity generated by VCE would be distributed to the project site through PG&E-owned and operated distribution and power lines. The proposed project would connect to existing electrical, natural gas, and telecommunications infrastructure located in the project vicinity. Given that the proposed project site currently contains a 53,248-sf commercial building and is surrounded by existing development, the

[34] California Department of Resources Recycling and Recovery (CalRecycle). *California's Estimated Statewide Diversion Rates Since 1989.* Available at: http://www.calrecycle.ca.gov/lgcentral/goalmeasure/disposalrate/Graphs/EstDiversion.htm. Accessed November 2016.

proposed project would not require major infrastructure improvements related to such utilities.

Electricity and natural gas demands associated with development of the proposed project are discussed in Section 4.3, Greenhouse Gas Emissions and Energy, of this EIR. As noted therein, although the proposed project would increase the demand for energy and natural gas service on the project site, the increase in demand from the project would be relatively small in comparison to overall demand within the City of Davis, and PG&E and VCE are anticipated to have adequate capacity to handle the increase in energy and natural gas service demand from the proposed project.

Based on the above, the proposed project would result in a ***less-than-significant*** impact related to electricity, natural gas, and telecommunications facilities.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in combination with other proposed and pending projects in the region. Refer to Chapter 5, Statutorily Required Sections, of this EIR for more detail.

4.8-6 Development of the proposed project, in combination with future buildout in the City of Davis, would increase demand on utilities and service systems. Based on the analysis below, the project's incremental contribution to this cumulative impact would be *less than cumulatively considerable*.

A discussion of potential cumulative impacts on utility systems is provided below.

Water Supply

Water supplies for the proposed project would be provided by the City of Davis. As discussed under Impact 4.8-2 above, the combined average domestic water demand associated with the proposed project would be approximately 38,568 gpd, or 14.07 mgy, which can be accommodated without the need for new or expanded water entitlements. As shown in Table 4.8-7 and Table 4.8-8, the City's overall water demand is anticipated to peak in 2025. The anticipated water demand for 2025 and beyond includes cumulative growth assumptions from buildout of the City's General Plan, relevant Specific Plans, and development of the Nishi, Mace Ranch Innovation Center, and formerly proposed Davis Innovation Center project. Thus, the project-level impact discussion for water supply and delivery considers the project's water demand in conjunction with demand from other cumulative buildout until 2035. As shown in Table 4.8-7 and Table 4.8-8, sufficient water supplies are available to serve the proposed project, other proposed projects, and cumulative growth within the City until at least 2035 during normal-year, single-dry year, and multiple dry-year scenarios.

As such, the water supply system is adequately sized to accommodate cumulative water demand within the City service area, including the proposed project, and the project's incremental contribution to cumulative impacts related to water supplies would be less than cumulatively considerable.

Wastewater

Wastewater treatment for the City of Davis is provided by the City's WWTP, which has a permitted capacity of 6.0 mgd. Current inflow to the WWTP is 4.34 mgd, leaving 1.66 mgd of capacity. The existing and future capacity of the WWTP is presented in Table 4.8-9 below, along with the estimated demand for buildout of the General Plan and large proposed developments such as Mace Ranch Innovation Center/Triangle, and the Nishi project. As shown in Table 4.8-9, the WWTP is anticipated to have a remaining capacity of 0.95 mgd with buildout of the City's General Plan. Projects not included in the City's General Plan, such as the Mace Ranch Innovation Center, the Triangle, the Nishi Project, and Lincoln40 would result in a cumulative ADWF demand of 0.33 mgd.[35]

Table 4.8-9
Summary of Existing and Future WWTP Capacity

Condition	ADWF (mgd)
WWTP Capacity	6.0
Existing Conditions	4.34
General Plan Buildout	5.05
Remaining Capacity	0.95
Cumulative Development Contribution	
Mace Ranch Innovation Center/Triangle	0.11
Nishi Project	0.18
Lincoln40	0.04
West Davis Active Adult	0.13
Proposed Project	0.03

Source: West Yost Associates. Technical Memorandum: Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity. April 2, 2015.

The proposed project's ADWF is anticipated to be 0.031 mgd under the Preferred Site Plan, with slightly reduced ADWF under Alternative B. Accounting for wastewater demand from the aforementioned development projects, as well as the proposed project, the WWTP would have a remaining capacity of approximately 0.49 mgd. As such, the WWTP would have adequate capacity to serve the proposed project as well as buildout of the General Plan and the aforementioned development projects.

With respect to the collection system, according to Attachment 6 of the Utility Study for the proposed project, the existing City sewer system flowing to El Macero Drive has the capacity to support the buildout of the General Plan with the inclusion of the proposed

[35] West Yost Associates. *Technical Memorandum: Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity*. April 2, 2015.

project (d/D equal to 50%).[36] The shed will be fully developed upon completion of this project, with little opportunity to add additional flows in the future.

Based on the above, the City's existing wastewater treatment and conveyance system would be capable of accommodating cumulative wastewater generation within the City service area, including the proposed project, and the project's incremental contribution to cumulative impacts related to wastewater would be less than cumulatively considerable.

Solid Waste

The proposed project would contribute construction, demolition, and operational waste to the Yolo County Central Landfill. As discussed above, numerous State and federal regulations exist regarding the composition and volume of solid waste being directed to landfills, as well as the amount of solid waste being diverted for recycling or reuse programs. The proposed project would be required by Tier 1 of CALGreen to divert at least 65 percent of construction and demolition waste generated during such activities. Additionally, the City has recently implemented an organic waste program, which is estimated to result in a maximum diversion rate of 30 percent. As discussed previously, the Yolo County Landfill currently has permitted capacity to accept an additional 800 tons per day or 239,200 tons per year. The current permitted capacity is anticipated to allow operation of the landfill to continue until the year 2124. The addition of 0.714 tons of waste per day attributable to the proposed project would not be considered substantial in light of the landfill's existing capacity of 800 tons per day. Therefore, the proposed project in combination with future buildout in the region would not result in a significant cumulative impact related to solid waste.

Energy, Natural Gas, and Telecommunications

As discussed previously, the proposed project would not require major extensions of energy or natural gas infrastructure, as such infrastructure currently exists on-site. Additionally, PG&E services are provided on-demand, and PG&E expands the distribution system as needed to accommodate growth. Cumulative projects would increase demand for electricity and natural gas services, but would be accommodated by PG&E's infrastructure. Similarly, while cumulative development within the City of Davis would increase demand on the City's telecommunications service providers (i.e., Comcast, AT&T, Omsoft, etc.), such services are readily scalable and would be expanded as necessary to accommodate future growth. Thus, cumulative impacts related to energy, natural gas, and telecommunications would be less than significant.

Conclusion

The proposed project, in conjunction with regional development, would increase demand on utilities in the area and have the potential to result in a significant cumulative impact.

[36] Cunningham Engineering. *Preliminary Utility Study for 3820 Chiles Road, Davis, CA* [pg. 3]. Revised May 22, 2018.

However, this analysis has demonstrated that the proposed project's incremental contribution to this cumulative impact would be considered ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.