

## 4.12

## UTILITIES AND SERVICE SYSTEMS

### 4.12.1 INTRODUCTION

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The Utilities and Service Systems section of the EIR describes the utilities and service systems 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 Lincoln40 Project (proposed project) implementation are assessed. Information for this section was drawn from the *Davis General Plan*<sup>1</sup> and associated EIR,<sup>2</sup> the City of Davis *Final 2015 Urban Water Management Plan (UWMP)*,<sup>3</sup> the *Davis Integrated Waste Management Plan*,<sup>4</sup> the *Lincoln40 Utilities Demand Memorandum* prepared by Cunningham Engineering,<sup>5</sup> as well as other sources noted within the section.

### 4.12.2 EXISTING ENVIRONMENTAL SETTING

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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 the City of Davis.

#### Water Supply

Water service within the City of Davis is provided to all residential, commercial, industrial, institutional, and irrigation customers, as well as open space and fire protection uses. The City of Davis' water system service area generally coincides with the City's boundary, is bordered by the UC Davis campus to the south, and additionally includes the El Macero (located south of Interstate 80 [I-80]), Willowbank, and the Royal Oak Manufactured Home Community areas that are located outside of the City's boundary (see Figure 4.12-1). 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.

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<sup>1</sup> City of Davis. *Davis General Plan*. Adopted May 2001. Amended through January 2007.

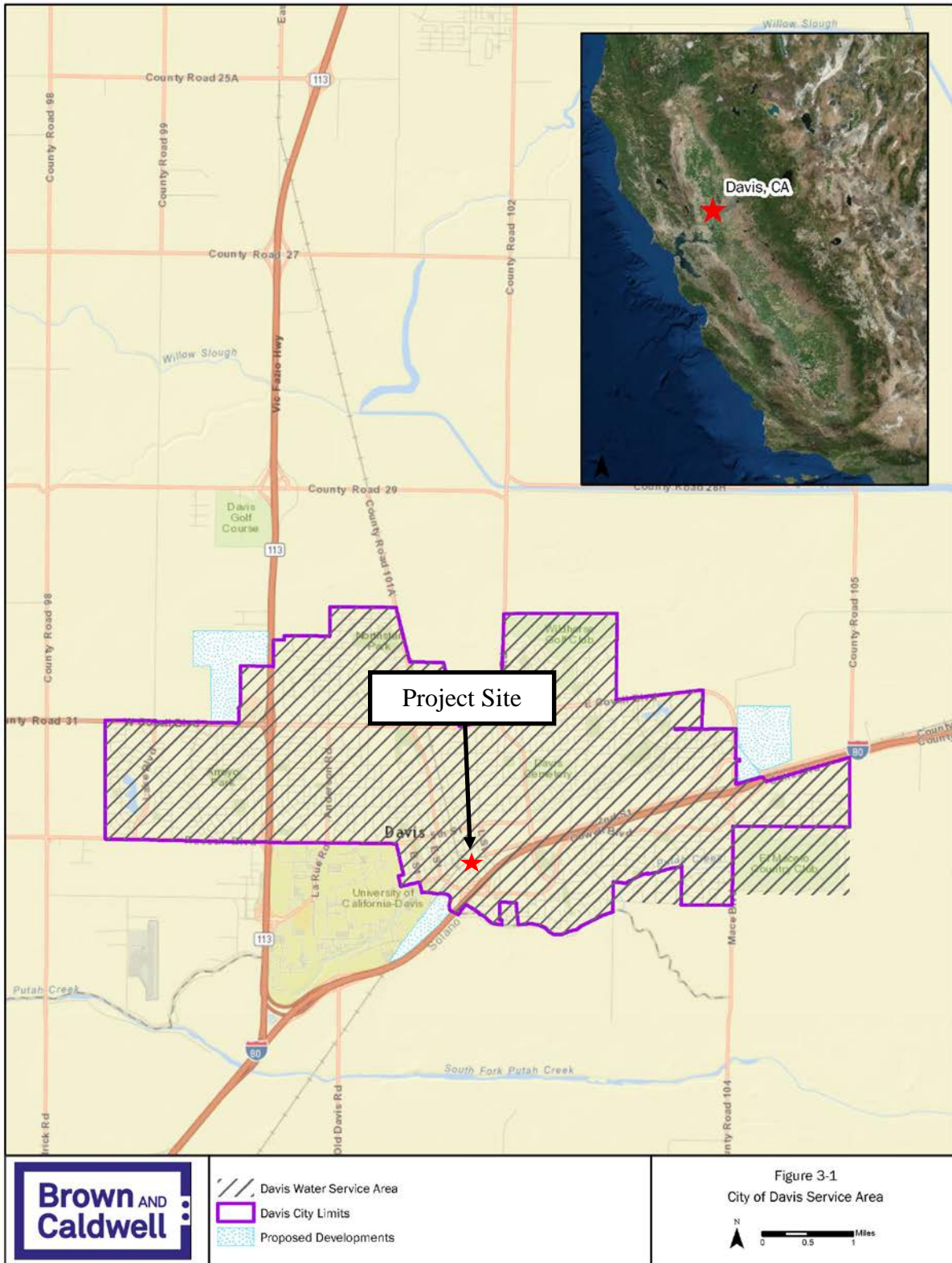
<sup>2</sup> City of Davis. *Program EIR for the City of Davis General Plan Update and Project EIR for Establishment of a New Junior High School*. January 2000.

<sup>3</sup> City of Davis. *Final 2015 Urban Water Management Plan*. June 2016.

<sup>4</sup> City of Davis. *Davis Integrated Waste Management Plan*. July 2013.

<sup>5</sup> Cunningham Engineering. *Memorandum: Lincoln40 Utilities Demand*. August 17, 2016.

**Figure 4.12-1  
 City of Davis Water Distribution Area**



Source: City of Davis. Final 2015 Urban Water Management Plan. June 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.<sup>6</sup> 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.<sup>7</sup>

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<sup>8</sup> and the UWMP<sup>9</sup>, 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.

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<sup>6</sup> Woodland – Davis Clean Water Agency. *The Project*. Available at [http://www.wdcwa.com/the\\_project](http://www.wdcwa.com/the_project). Accessed on September 13, 2016.

<sup>7</sup> Woodland – Davis Clean Water Agency. *Introduction to Surface Water*. March 2016.

<sup>8</sup> Department of Water Resources. *Bulletin 118* [pg. 98]. Update 2003.

<sup>9</sup> 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 coarse-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.<sup>10</sup>

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.<sup>11</sup>

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

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<sup>10</sup> City of Davis. *Final 2015 Urban Water Management Plan*. June 2016.

<sup>11</sup> 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 is depicted in Table 4.12-1.

<b>Table 4.12-1 Groundwater Production</b>					
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Volume Pumped (Acre Feet per Year)</b>	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 4.12-2 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 4.12-2 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 4.12-2 could be greater than depicted.

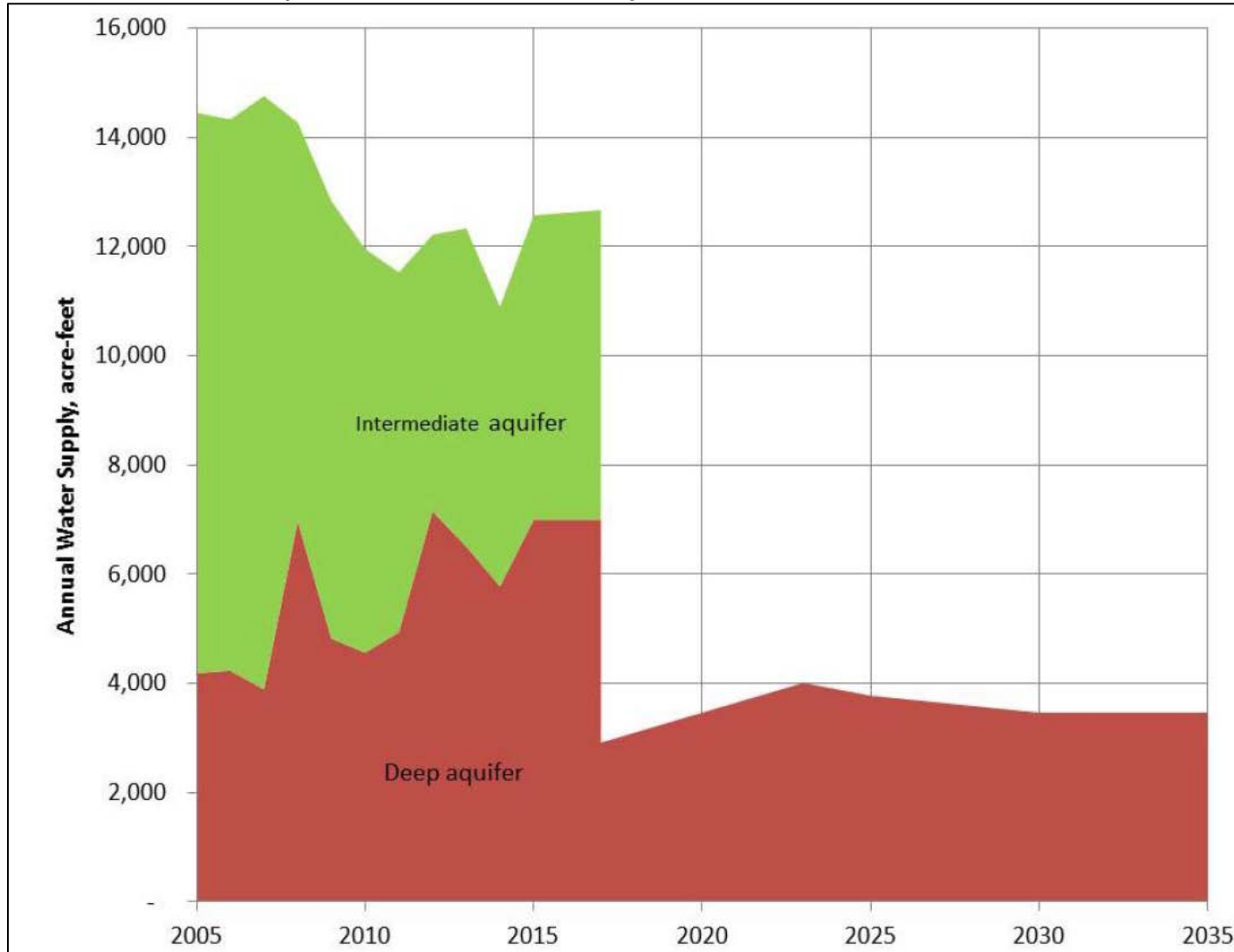
The quantity of the City’s water supply available from groundwater is not impacted by dry, average, or wet years.<sup>12</sup> In dry years the groundwater levels may decline, but this does not reduce the pumping capacity of the City’s wells until the groundwater levels drop significantly. The City has 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.

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

**Figure 4.12-2**  
**City of Davis Historical and Projected Groundwater Utilization**



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

The WDCWA surface water treatment plant capacity is 30 million gallons per day (mgd). Up to 12 mgd would be conveyed to the City of Davis through a 30-inch diameter transmission pipeline. The City would be supplying up to 1.8 mgd of surface water to UC Davis, which means that the maximum capacity available for the City would be 10.2 mgd.<sup>13</sup>

The WDCWA has two Sacramento River water rights, consisting of a primary water right of 45,000 acre feet per year (ac-ft/yr) and a secondary right of 10,000 ac-ft/yr. The City's share of this supply would be 18,700 ac-ft/yr, assuming that it is proportional to the share of the proposed treatment plant capacity. The surface water treatment plant capacity would have to be enlarged for the City to be able to fully utilize this amount.

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 ac-ft/yr. 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,<sup>14</sup> 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 counter act the wholesale supply reduction impacts of Term 91 curtailments.<sup>15</sup>

### *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 that is supplemented by well conversion/irrigation, ASR, rainwater catchment, grey water, and storm water, with water conservation to reduce demands.<sup>16</sup> 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

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<sup>13</sup> Woodland – Davis Clean Water Agency. *The Project*. Available at [http://www.wdcwa.com/the\\_project](http://www.wdcwa.com/the_project). Accessed on December 8, 2016.

<sup>14</sup> Brown and Caldwell. *Water Supply Assessment for the City of Davis* [pg. 4-5]. February 2015.

<sup>15</sup> Brown and Caldwell. *Water Supply Assessment for the City of Davis* [pg. 4-5]. February 2015.

<sup>16</sup> Brown and Caldwell. *Water Supply Assessment for the City of Davis* [pg. 4-5]. February 2015.

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 4.12-2, which does not consider any limitations due to the capacities of existing water system supply facilities and infrastructure.

<b>Table 4.12-2 Annual Amount Under Each Water Supply Source</b>			
<b>Supply</b>	<b>Contract Amount (ac-ft/yr)</b>	<b>Right</b>	<b>Contract</b>
Groundwater	No Limit <sup>1</sup>	X	
Wholesale Surface Water	18,700 <sup>2</sup>		X
Notes: ac-ft/yr = acre feet per year 1. While there is no legal limit on annual pumping, 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 will be limited by the capacities of the supply facilities and intermittent Term 91 curtailments.  <i>Source: Brown and Caldwell. Water Supply Assessment for the City of Davis. February 2015.</i>			

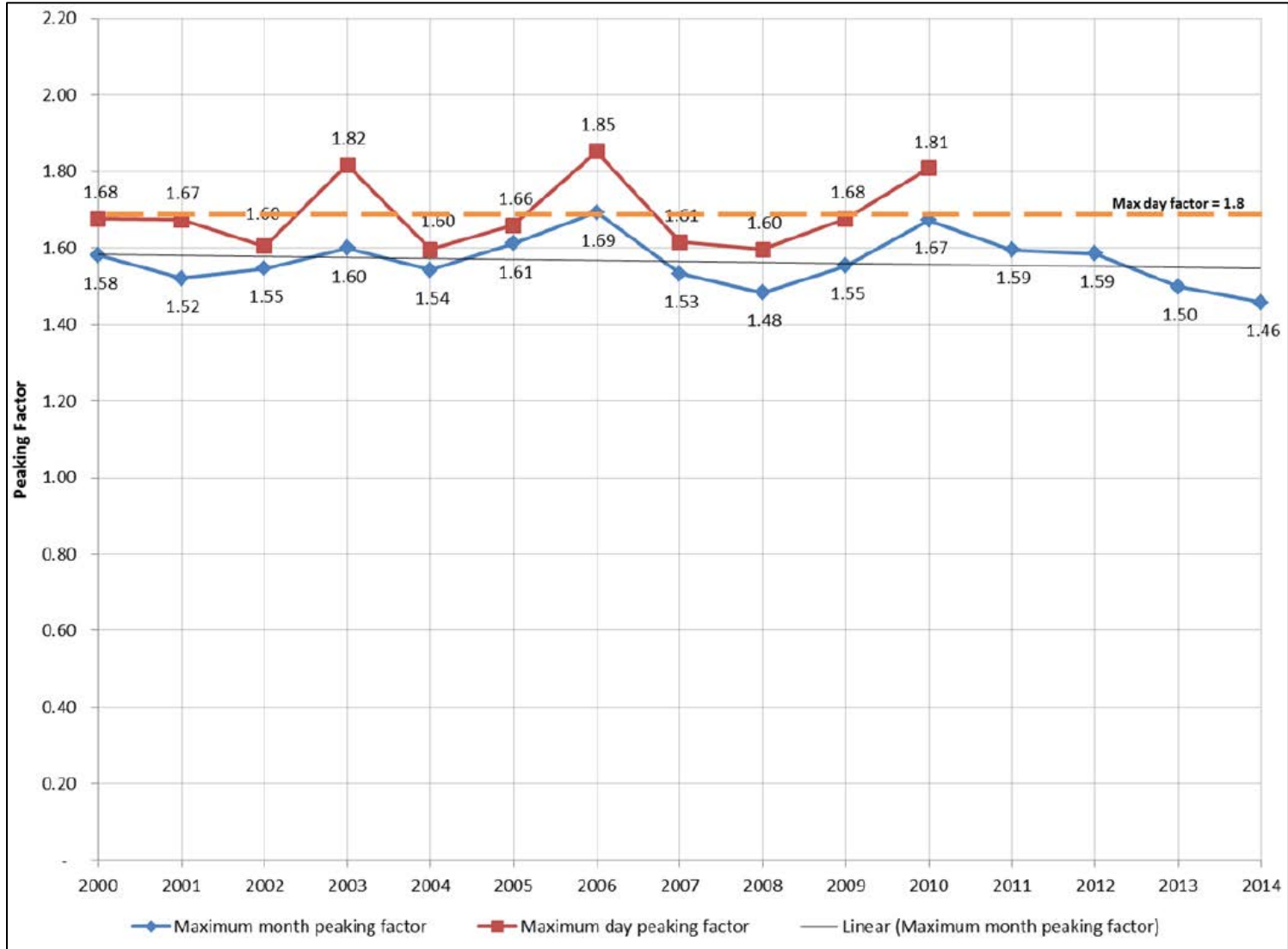
The annual amounts of groundwater and wholesale surface water available to the City are limited by the capacities of the water supply infrastructure. The water supply infrastructure is sized to serve the maximum day demand. Figure 4.12-3 presents the City’s historical maximum day and maximum month peaking 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 4.12-3.



**Figure 4.12-3**  
**City of Davis Historical Maximum Day and Maximum Month Peaking Factors**



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

<b>Table 4.12-3 Water Supply Capacity</b>	
<b>Water Supply</b>	<b>Reasonably Available Volume (Ac-ft/yr)</b>
Surface Water	11,246
Groundwater	14,834
<b>Total Supply</b>	<b>26,080</b>
Note: Reasonably Available Volume given apply to years 2020, 2025, 2030, 2035, 2040	
<i>Source: City of Davis. Final 2015 Urban Water Management Plan. June 2016.</i>	

Projected Water Demand

The projected water demands through 2035 include the buildout demand of the City’s existing water system’s service area.

*Buildout Demand of the Existing Service Area*

The number of dwelling units and commercial and industrial acres remaining to be added to the City to reach buildout of the existing service area were provided by the City and are presented in Table 4.12-4. The number of future dwelling units to reach buildout was obtained from the City’s housing element update, and the buildout population of the City’s existing water system service area is estimated to be 73,531. Additional employment was estimated assuming that the future employees per acre would be 50 percent greater than the City’s current average based on the potential employment that could be generated from the remaining commercial and industrial development within the City’s current service area. Notably, buildout estimates, used in the WSA prepared for the City, included the Mace Ranch Innovation Center, the Davis Innovation Center, the Nishi project, and the Triangle.

<b>Table 4.12-4 City of Davis Service Area Buildout Demographics</b>			
<b>Source</b>	<b>2013</b>	<b>Additional Increment</b>	<b>Buildout</b>
Dwelling Units	26,596	2,231	28,827
Employees	37,500	7,500 <sup>1</sup>	45,000
Connections <sup>2</sup>	16,583	980	17,563
Population	67,508	6,023 <sup>3</sup>	73,531
Com/Ind Area (acre)	708	116	824
Notes:			
1. Employee calculated based on 1.5 times proportional increase in Com/Ind area.			
2. Based on 2013 MFR dwelling units/connection and 50 percent increase in 2013 Com/Inst/Ind connections per acre.			
3. Based on 2.7 people per dwelling unit.			
<i>Source: Brown and Caldwell. Water Supply Assessment for the City of Davis. February 2015.</i>			

Table 4.12-5 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.

<b>Table 4.12-5 Projected Water Demand</b>				
<b>Land Use</b>	<b>Projected Water Use by Year (Ac-ft/yr)</b>			
	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
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
<b>Total</b>	<b>13,492</b>	<b>13,971</b>	<b>13,560</b>	<b>13,560</b>

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

As shown in Table 4.12-5, 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 4.12-4.

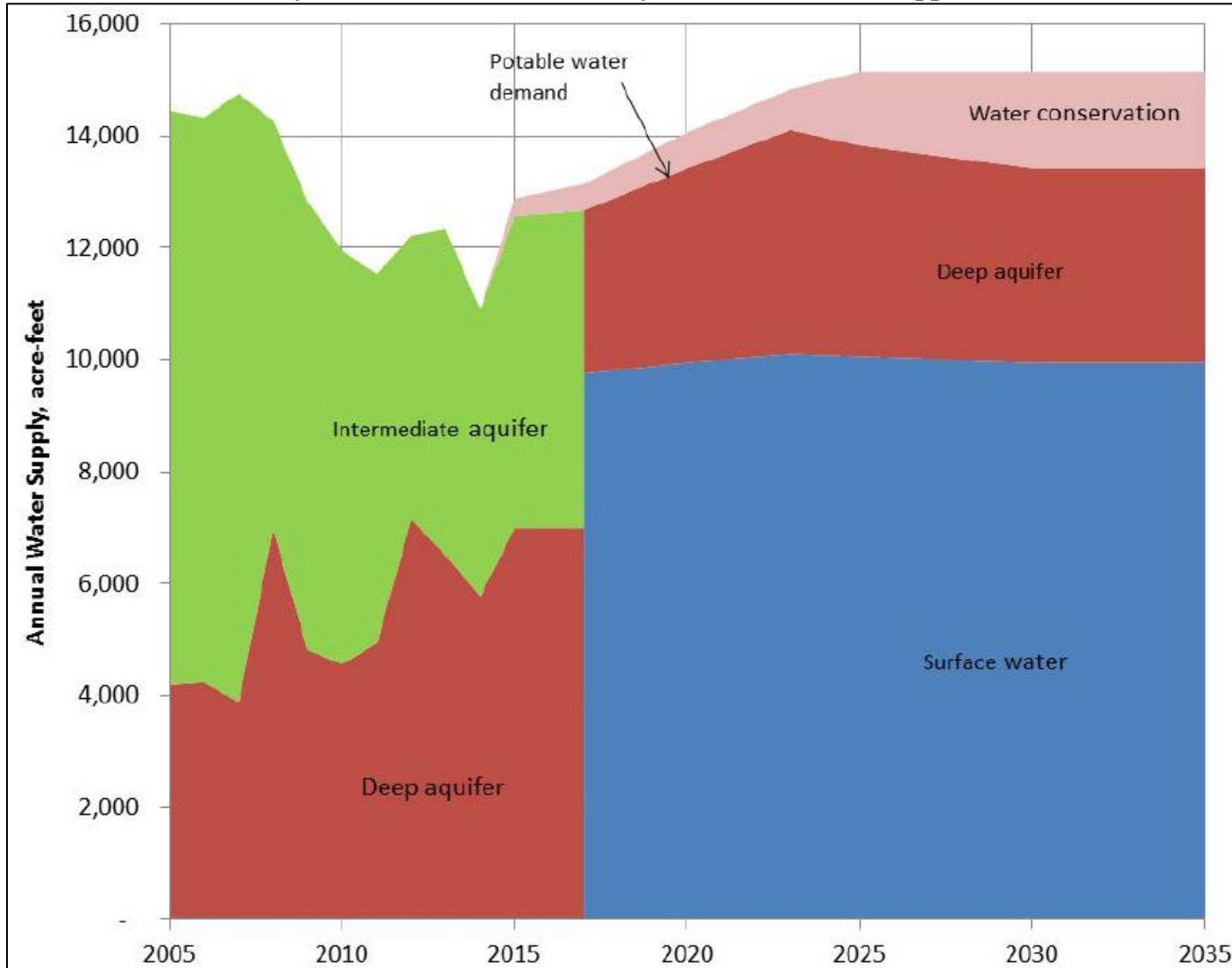
The WSA prepared for the City concluded that the City’s water supply would be sufficient to serve the City’s water demand, during normal water years, under buildout conditions.<sup>17</sup> In the event of drought conditions, the City may experience reduced amounts of surface water availability. However, 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 4.12-6 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.

*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.

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

**Figure 4.12-4**  
**City of Davis Historical and Projected Use of Water Supplies**



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

		<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
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
Difference		12,588	12,109	12,520	12,520
Notes: ac-ft/yr = acre feet per year					
<i>Source: City of Davis. Final 2015 Urban Water Management Plan. June 2016.</i>					

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.<sup>18</sup>

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. The requirements include:

- Prohibiting using water for street and sidewalk cleaning and gutter flooding.
- All plumbing leaks must be corrected.
- Car wash facilities must use recycled water.
- No watering outdoors between 9 a.m. and 6 p.m., except with a hand-held container or hose with a shut-off nozzle, or for very short periods when adjusting a sprinkler system.
- Outdoor watering is restricted to three days a week: Tuesday, Thursday and Saturday for premises with odd numbered addresses and Wednesday, Friday and Sunday for premises with even numbered addresses. No outdoor watering on Monday.
- No watering during periods of rain.

<sup>18</sup> City of Davis. *Final 2015 Urban Water Management Plan*. June 2016.

- Unlawful for any person to apply potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private walkways, roadways, parking lots, or structures.
- Unlawful for any person to use a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shot-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use.
- Unlawful for any person to apply potable water to driveways and sidewalks.
- Unlawful for any person to use potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.
- Unlawful for any restaurant to serve drinking water unless a patron requests drinking water.
- Unlawful for any restaurant to wash dishes unless the dish washing system is fitted with a water saving dish wash spray valve.
- Unlawful to install non-recirculating water systems at new commercial car washes and laundry systems.
- Unlawful for hotels and motels to fail to provide guests with notice and the option to decline daily bed linen and towel changes.

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 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.<sup>19</sup> 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. The WSCP acknowledges that while drought can be a cause of water supply shortages, other factors such as contaminated wells or surface water can act alone or in combination with other factors to create a shortage event.

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<sup>19</sup> City of Davis. *Final 2015 Urban Water Management Plan*. June 2016.

## 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.<sup>20</sup>

### Pipelines

The City's water system consists of piping ranging from two to 14 inches in diameter. Almost 90 percent of the distribution system consists of six- to 10-inch diameter pipelines. The City's pipeline system was constructed to support localized supply, with wells spread throughout the City, which did not require large diameter transmission mains. However, significant changes to the City's water supply system have recently been made, related to the Davis Water Quality Improvement Program. Such changes include the construction of a six-mile pipeline that connects to the WDCWA treatment plant's 30-inch distribution line in Pole Line Road. As of December 2016, all new pipelines related to the Davis Water Quality Improvement Program have been constructed and are in use.<sup>21</sup>

### 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.

### Interties

The City is connected to the UC Davis water system through two interties. UC Davis entered into a contract for 2,000 ac-ft/yr in July 2014.<sup>22</sup> UC Davis will connect to the new Davis Water Quality Improvement Program pipeline, and, thus, to WDCWA's treatment plant. Connections to the Davis Water Quality Improvement Program pipeline will be made through a pipeline within A Street, B Street, and F Street, which will then connect to the City's new line in Covell Boulevard.

### Water System Facilities within Project Site Vicinity

Existing water facilities adjacent to the project site include a six-inch City water main located along Olive Drive and a second six-inch water main located in Hickory Lane. The six-inch water

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<sup>20</sup> City of Davis. *Public Works*. Available at <http://cityofdavis.org/city-hall/public-works>. Accessed September 15, 2016.

<sup>21</sup> City of Davis, Public Works. *Davis Water Quality Improvement Project*. Available at <http://cityofdavis.org/city-hall/public-works/water/davis-water-quality-improvement-project>. Accessed March 2017.

<sup>22</sup> Woodland Davis Clean Water Authority. *UC Davis Moves Forward with Regional Water Project*. Available at <http://water.cityofdavis.org/Media/Water/Documents/PDF/PW/Water/WaterQuality-Improvement-Project/UC-Davis-Surface-Water-Project.pdf>. Accessed September 2016.

main in Olive Drive and the six-inch water main in Hickory Lane currently serve the existing on-site development. Furthermore, the existing six-inch water line in Olive Drive serves other developments within the Olive Drive area.

## **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 is currently being upgraded to ensure compliance with all existing and anticipated wastewater discharge standards, and has an anticipated completion date of Fall 2017. The City's WWTP upgrade project includes 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. The project is being accomplished in two phases: Rehabilitation and Replacement (R&R) Phase and Secondary and Tertiary Improvements (STI) Phase, the first of which is already complete and the second of which has been approved, funded, and is underway.



*Secondary and Tertiary Improvements (STI) Phase – Projected Completion date of Fall 2017*

The following secondary and tertiary WWTP improvements have been approved and funded:

- Secondary replacement – new secondary biological treatment and clarification (replacing the ponds and overland flow treatment system with conventional activated sludge process)
- New tertiary (advanced treatment) – new filtration and coagulation facilities
- Disinfection – upgrade existing disinfection
- Incorporate ponds as equalization, redundancy for treatment systems, and future treatment capacity
- New solids handling equipment and modifications to existing digesters
- New laboratory facility and modify existing operations and maintenance facilities

The WWTP would be 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 4.12-7.

As indicated in Table 4.12-7 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. This is supported by the fact that WWTP influent biochemical oxygen demand (BOD) concentrations were proportionally higher in 2014 versus previous years (A reverse correlation between WWTP influent flow and BOD concentration is expected). The calculated BOD loads in pounds per day (lbs/day) show less variability than either the flow or BOD concentrations during the same period due to the off-setting effect of the latter two parameters on each other.

<b>Table 4.12-7</b>				
<b>Davis WWTP Influent ADWF and BOD Values, 2010-2014</b>				
Year	ADWF (mgd)	BOD (mg/L)	BOD (lbs/day)	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
<b>5-Year Average</b>	<b>4.34</b>	<b>219</b>	<b>7,900</b>	-
Coefficient of variation <sup>1</sup>	8.2%	11.4%	4.1%	-
Notes: mgd = million gallons per day mg/L = milligrams per liter lbs/day = pounds per day 1. Defined as the standard deviation divided by the arithmetic mean; indicates the degree of variability in the data.				
<i>Source: West Yost Associates. Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity. Technical Memorandum (Final). April 2, 2015.</i>				

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. On the other hand, the inclusion of the 2014 value in a 5-year average seems reasonable in calculating a sufficiently robust ADWF value, given the potential for periodic drought-related water use reductions.

Based on these considerations, the 5-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 existing average ADWF of 4.34 mgd and a WWTP capacity of 6.0 mgd, once the STI phase of the WWTP upgrade project has been completed, West Yost has estimated that the available ADWF capacity of the WWTP is 1.66 mgd, or 28 percent of design capacity.<sup>23</sup>

Another way to assess remaining WWTP capacity involves consideration of BOD loadings rather than flows. The use of BOD loadings as an indicator of capacity is relevant because certain key treatment processes (namely secondary treatment facilities) are sized to handle organic loadings rather than flow. According to West Yost, the design average dry weather BOD loading is 10,100 lbs/day.<sup>24</sup> It should be noted that sizing of secondary facilities is driven more by maximum month loadings rather than average loadings. However, it is generally assumed that the proportionality between average and maximum month BOD loadings remains constant over time, such that the use of average BOD loadings to assess available WWTP capacity remains valid.

Assuming the average BOD loading for the period of 2010–2014 represents current conditions (in a manner similar to the ADWF values for that same period), then the existing average dry weather WWTP influent BOD loading is 7,900 lbs/day, as shown in Table 4.12-7 above. However, given the variability in the BOD loadings over the past five years, and given the variability inherent in influent BOD sampling, West Yost assumed a 5 percent safety factor when estimating existing BOD loadings. Therefore, the existing average dry weather WWTP influent BOD loading is assumed to be 8,300 lbs/day for this analysis. The use of this value implies that 1,800 lbs/day of average dry weather BOD loading are available for future development, upon completion of the WWTP upgrade project in Fall 2017.<sup>25</sup>

### 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.<sup>26</sup>

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<sup>23</sup> West Yost Associates. *Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity* [pg. 4]. Technical Memorandum (Final). April 2, 2015.

<sup>24</sup> *Ibid.*

<sup>25</sup> *Ibid.*

<sup>26</sup> City of Davis. *Sewer System Management Plan*. August 2012.

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 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*

Two sewer mains currently exist in the project area: an eight-inch sewer main running along Olive Drive and a six-inch sewer main running along Hickory Lane. The existing on-site development currently connects to the nearby wastewater infrastructure. The City of Davis estimates that the domestic sewer unit generation rate is 65 gpd per capita. Using an average persons per dwelling unit rate of 2.71 persons per dwelling unit, the average sewer unit generation rate would be 176 gallons/day/unit.<sup>27</sup> Currently, 20 residential units on the project site are occupied, which would be associated with the generation of 3,523 gpd or 1.3 million gallons per year (mgy) of wastewater.

### **Solid Waste Disposal**

Solid waste collection and disposal in the City of Davis is provided by Davis Waste Removal (DWR), Inc. DWR 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, DWR 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 2081.<sup>28</sup> The remaining capacity at the Yolo County Central Landfill is approximately 36,555,700 cubic yards.<sup>29</sup> Under the landfill's existing permit, the facility is allowed to receive up to 1,800 tons per day, 299 days a year. Currently, the landfill averages approximately 1,000 tons of solid waste disposed per day.<sup>30</sup> 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.

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<sup>27</sup> Cunningham Engineering. *Memorandum: Lincoln40 Shed Sewer Calculations*. October 12, 2016.

<sup>28</sup> City of Davis. *Davis Integrated Waste Management Plan* [pg. 13-119]. July 2013.

<sup>29</sup> California Department of Resources Recycling and Recovery (CalRecycle) Permits and Assistance, North Central Section. Personal email communication with Raney Planning & Management Inc. March 23, 2015.

<sup>30</sup> City of Davis. *Davis Integrated Waste Management Plan* [pg. 13-119]. July 2013.

## Electricity and Natural Gas

Gas and electric service in the City of Davis is 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 ten-inch, six-inch, and two-inch PG&E gas lines traverses the eastern corner of the project site. Furthermore, overhead power lines, which originate at the PG&E K Street substation, cross the eastern portion of the project site before continuing along Olive Drive to the west.

## 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. In 2015, 65 percent of Davis residents that were polled reported using AT&T of California, Comcast or Omsoft, while the remaining 35 percent used other fixed wireless, satellite or other competitive providers. Download speeds in the Davis area were generally found to be highest in urbanized areas where a high density of single-family or multi-family dwellings were present.

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.<sup>31</sup>

Fiber optic cables within the City are within the rail line right of way, which makes up the northern border of the project site.

### 4.12.3 REGULATORY CONTEXT

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

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<sup>31</sup> Magellan Advisors, LLC. *Final Yolo Broadband Strategic Plan*. March 26, 2015.

## **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 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 130 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**

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.

#### 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.

## **4.12.4 IMPACTS AND MITIGATION MEASURES**

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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, 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.

### Issues Not Discussed Further

The proposed project's impact associated with storm water drainage facilities is addressed in Section 4.6, Hydrology and Water Quality, of this EIR. Please refer to Section 4.6 for a detailed discussion of this topic.

### **Method of Analysis**

The Impacts and Mitigation Measures section evaluates the impacts of the proposed project on existing utilities and service systems, which could occur if the project is developed as currently proposed. Impact significance is determined by comparing project conditions to the existing conditions.

### 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 developed by Brown and Caldwell in a 2015 Water Supply Assessment conducted for the City.<sup>32</sup> Cunningham Engineering determined the ADD rate of 57 gpcd was appropriate for the proposed project due to the inclusion of water efficient indoor fixtures, as well as water efficient outdoor landscaping.

Fire Flow demands for the proposed project were determined through hydraulic modeling using the InfoWater system. Hydraulic modeling was performed for the proposed project by Brown and Caldwell. In addition to the InfoWater modeling, Brown and Caldwell completed a fire flow field test in July of 2016. The test used the existing hydrant at 1042 Olive Drive, and the field test results were compared to the model results.<sup>33</sup>

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<sup>32</sup> Brown and Caldwell. *Water Supply Assessment for the City of Davis*. February 2015.

<sup>33</sup> Brown and Caldwell. *Technical Memorandum: Lincoln Development Fire Flows*. December 22, 2016.

## Wastewater Collection

Cunningham Engineering prepared a technical memorandum for the City of Davis to assess potential impacts of the proposed project on the City of Davis wastewater collection system.<sup>34</sup>

The memorandum evaluates the existing sewer pipeline along West Olive Drive, L Street and 5<sup>th</sup> Street connecting to Sewer Lift Station No. 4 on 5<sup>th</sup> Street. Capacity evaluation included an initial estimate of cumulative flow rates for the proposed project site and the surrounding sewer shed (see Figure 4.12-5).

Flows from the existing residential developments on the project site were 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 unit generation rate was estimated to be 65 gpcd. Based on further input from the City, the existing residential developments are assumed to support approximately 2.71 residents per dwelling unit. Although the estimates for flow rates from the existing residential developments on the project site relied on influent measurements at the WWTP, the WSA prepared for the City by Brown and Caldwell estimated that new developments within the City would involve sewer unit generation rates of 57 gpcd.<sup>35</sup> Although the Brown and Caldwell sewer unit generation rate is lower than the rate estimated by the City, Cunningham Engineering determined that the inclusion of efficient, low-flow fixtures and individual water metering for each unit would reduce water use, and, thus, wastewater generation. As a result, Cunningham Engineering determined that a 57 gpcd generation rate<sup>36</sup> would be more appropriate for the proposed project.<sup>37</sup>

Wastewater generation rates for the nearby retail and commercial structures were estimated using the City of Davis' *Sewer Management Plan*<sup>38</sup> 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.<sup>39</sup>

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<sup>34</sup> Cunningham Engineering. *Memorandum: Lincoln40 Shed Sewer Calculations*. October 12, 2016.

<sup>35</sup> Brown and Caldwell. *Water Supply Assessment for the City of Davis* [pg. 4-5]. February 2015.

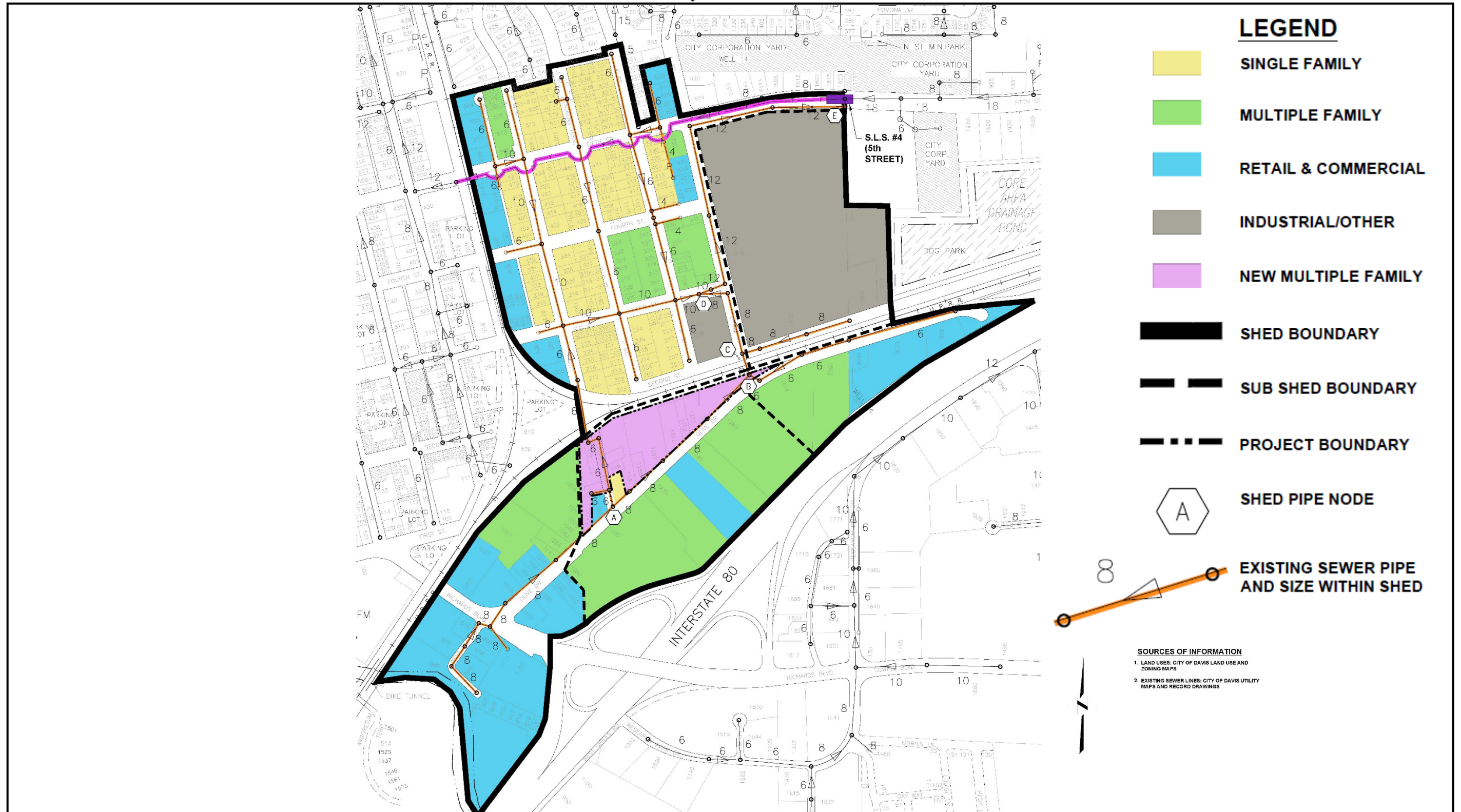
<sup>36</sup> Cunningham Engineering. *Memorandum: Lincoln40 Shed Sewer Calculations*. October 12, 2016.

<sup>37</sup> Brown and Caldwell. *Water Supply Assessment for the City of Davis* [pg. 4-5]. February 2015.

<sup>38</sup> City of Davis. *Sewer System Management Plan*. August 2012

<sup>39</sup> Cunningham Engineering. *Memorandum: Lincoln40 Shed Sewer Calculations*. October 12, 2016.

Figure 4.12-5  
 Sewer Study Shed Area



## 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.

**4.12-1 Would the project 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*.**

Potential impacts of the proposed project related to the water supply, and delivery infrastructure are analyzed below.

### Water Supply

Cunningham Engineering calculated the proposed project’s domestic water demand based on a per capita demand rate of 57 gpcd.<sup>40</sup> The domestic water demand of the proposed project would be approximately 14.7 mgy, as shown in Table 4.12-8, below. In addition to the 14.7 mgy domestic water demand, the proposed landscaping would consume water for irrigation purposes. To reduce the water demand for irrigation, the proposed project would incorporate landscape plantings and irrigation systems specifically chosen and designed to reduce irrigation water demand. For example, the proposed project landscaping would be comprised of drought tolerant, low water use plant materials selected from California native species and many from the UC Davis “Arboretum All-Stars” plant palette. Plants would be grouped and placed according to their sun and shade needs. The irrigation system would be a low maintenance system comprised mainly of low volume subsurface drip irrigation, which would allow for distribution of water to each plant that could be adjusted as needed to avoid overwatering. Through the use of low water demand plantings and efficient irrigation systems, the proposed project would be anticipated to consume approximately 0.9 mgy for irrigation.

Table 4.12-8 Proposed Project Domestic Water Demand (Indoor Use)						
Total Residents	Average Day Demand		Peak Day Demand		Peak Hour Demand (gpm <sup>1</sup> )	Annual Usage (mgy)
708	40,356 gpd	28 gpm	40,356 gpd	28 gpm	50	14.7
<sup>1</sup> gpm = gallons per minute						
Source: Cunningham Engineering. Preliminary Water Demands. August 05, 2016.						

The City’s existing water supplies and projected water demands are anticipated to result in annual water surpluses as shown in Table 4.12-9 below. The demand figures included in

<sup>40</sup> Brown and Caldwell. *Water Supply Assessment for the City of Davis*. February 2015.

Table 4.12-9 were generated using buildout information for the City, which includes general development within the City, as well as development of the Mace Ranch Innovation Center, Davis Innovation Center, and Nishi projects.<sup>41</sup> Operation of the proposed project would result in a domestic water demand of 14.7 mgd and an irrigation water demand of 0.9 mgd, for a total water demand of 15.6 mgd. Given the City’s surplus of at least 2,744 mgd, the City’s current water supply could accommodate the proposed project’s operational water demand of 15.6 mgd. In addition, as shown in Table 4.12-10 below, sufficient water supply would exist to serve the proposed project’s operational water demand of 15.6 mgd during multiple dry years.

	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
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

Notes: ac-ft/yr = acre feet per year

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

	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
<b>First Dry Year</b>				
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
<b>Second Dry Year</b>				
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
<b>Third Dry Year</b>				
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

Notes: ac-ft/yr = acre feet per year

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

Water Delivery Infrastructure

The proposed project would include installation of new water pipes, which would connect to the existing six-inch water main in Olive Drive. In addition, as shown in Figure 3-10 of the Project Description chapter of this EIR, the proposed project would involve the construction of a fire loop connecting the existing six-inch water line in Hickory Lane to

<sup>41</sup> City of Davis. Final 2015 Urban Water Management Plan [p. 3-1]. June 2016

the existing six-inch water main in Olive Drive. Two fire hydrants would be provided on the project site.

Brown and Caldwell performed a Fire Flow analysis to determine whether the water pipes included in the proposed project would provide sufficient water supply to meet the California Department of Health Services’ minimum pressure requirement of 20 psi. Brown and Caldwell assessed the existing conditions at the site with a field fire flow survey before modeling the conditions that would result from build-out of the proposed project. Table 4.12-11 below shows model results for fire flow availability within the proposed development at average daily demand and maximum daily demand and fire flow. As shown in the table, minimum pressures at the project site would exceed the 20-psi standard during both ADD and maximum daily demand (MDD) and fire flow conditions.<sup>42</sup>

<b>Table 4.12-11 Proposed Project Fire Flow</b>				
<b>Condition</b>	<b>Static Pressure (psi)</b>	<b>Residual Pressure (psi)</b>	<b>Residual Flow (gpm)</b>	<b>Flow at 20 psi (gpm)</b>
MDD	46	23	1,500	1,606
ADD	65	45	1,500	2,404

*Source: Brown and Caldwell. Technical Memorandum: Lincoln Development Fire Flows. December 22, 2016.*

Conclusion

As discussed above, the City’s existing water delivery infrastructure system would be able to accommodate the domestic and fire flow demands associated with the proposed project. Therefore, the proposed project would have a *less-than-significant* impact related to water delivery and supply.

Mitigation Measure(s)

*None required.*

**4.12-2 Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments, and that project wastewater would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board. Based on the analysis below, the impact is *less than significant*.**

Potential impacts of the proposed project related to the wastewater treatment, and collection system are analyzed below.

<sup>42</sup> Brown and Caldwell. *Technical Memorandum: Lincoln Development Fire Flows*. December 22, 2016.

Wastewater Treatment

Operation of the proposed project would generate wastewater, which would flow into the City’s wastewater infrastructure along Olive Drive, and eventually flow to the WWTP for treatment. Cunningham Engineering analyzed the potential wastewater generated by the proposed project as well as the remaining capacity in the City infrastructure.

The improvements to the WWTP, previously discussed in this section, are anticipated to be completed in 2017. As such, the WWTP would operate with a total capacity of 6.0 mgd of ADWF prior to 2019, the first year of operations of the proposed project. Existing and anticipated demand on the WWTP is estimated to equal approximately 4.34 mgd, which results in a remaining capacity of 1.66 mgd.<sup>43</sup> The proposed project would result in a total sewer demand as presented in Table 4.12-12 below.

<b>Table 4.12-12 Proposed Project Sewer Demand</b>				
<b>Future Resident Population</b>	<b>Per Person Sewer Generation Rate (gpd)</b>	<b>Total ADD (gpd)</b>	<b>Total ADD (mgd)</b>	<b>Peak Wet Weather Flow<sup>1</sup> (mgd)</b>
708	57	40,356	0.04	0.12
<sup>1</sup> Peaking factor equation for peak wet weather flow based on City of Davis Standards				
<i>Source: Cunningham Engineering. Preliminary Sewer Demands. August 05, 2016.</i>				

Considering the remaining capacity of the WWTP would be 1.66 mgd after the completion of the WWTP improvements, the proposed project’s ADD of 0.04 and the peak wet weather flow of 0.12 mgd could be accommodated within the WWTP’s capacity. Furthermore, the proposed project’s ADD of 0.04 represents gross demand for the proposed project. The project site is currently developed with 24 residential units, 20 of which are currently occupied and generate approximately 0.004 mgd of wastewater. Therefore, the proposed project’s net ADD would be somewhat lower than what is presented in Table 4.12-12, and an increased ADD of 0.04 would be considered conservative. As such, the proposed project would result in a determination by the wastewater treatment provider that adequate capacity within the wastewater treatment infrastructure does exist, and the proposed project would not require off-site improvements to such systems.

Wastewater Collection

Cunningham Engineering analyzed the capacity of the existing eight-inch sewer line in Olive Drive, as well as the sewer line links within the surrounding sewer shed. The proposed project would connect to the existing eight-inch sewer line in Olive Drive at one point near the center of the proposed structure (see Figure 3-10 in the Project Description

<sup>43</sup> West Yost Associates. *Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity* [pg. 4]. Technical Memorandum (Final). April 2, 2015.



chapter of this EIR). As discussed in Impact Statement 4.12-5, the existing infrastructure in the project area is adequately sized to accommodate foreseeable cumulative development, including 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 sewer shed area. As such, the proposed project would result in a determination by the wastewater treatment provider that adequate capacity within the wastewater pipeline infrastructure does exist, and the proposed project would not require off-site improvements to such systems.

### Conclusion

Based on the above, wastewater generated by the proposed project could be accommodated by existing and planned wastewater treatment capacity, and the project's wastewater generation would not lead to the violation of the City's current NPDES permit. In addition, the proposed project would be required to pay sewer impact fees, which would contribute towards the cost of future upgrades of the wastewater collection system and treatment plant. As such the proposed project would result in a *less-than-significant* impact related to the City's wastewater collection system.

### Mitigation Measure(s)

*None required.*

#### **4.12-3 Would the project be served by a landfill with sufficient 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 Davis Waste Removal, 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 2081. The Yolo County Central Landfill is permitted to accept 1,800 tons of waste per day; however, in 2013 the landfill was averaging about 1,000 tons of waste per day.<sup>44</sup> 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.

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<sup>44</sup> City of Davis. *Davis Integrated Waste Management Plan*. July 2013.

The proposed project would involve the demolition of approximately 18,200 sf of existing structures, and the subsequent construction of 249,788 sf of residential and ancillary structures. The U.S EPA's report, *Characterization of Building-related Construction and Demolition Debris in the United States*, was used to estimate the amount of waste that would be generated by construction and demolition activities. The EPA estimates that residential demolition creates an average of 115 pounds per sf (lbs/sf), and residential construction generates an average of 4.38 lbs/sf. The proposed project would therefore generate 2,093,000 lbs of demolition waste (18,200 sf x 115 lbs/sf = 2,093,000 lbs) and 1,094,071 lbs of construction waste (249,788 sf x 4.38 lbs/sf = 1,094,071 lbs) for a total construction waste generation of 3,187,071 lbs or approximately 1,593.5 tons.<sup>45</sup> Given that the existing on-site residential structures are smaller than typical single-family residences, the EPA estimate of residential demolition waste generation provides a conservative projection for the purposes of the proposed project.

Waste generated by the 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 1,593.5 tons is 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 0.3 percent of the Landfill's total yearly capacity and 0.5 percent of the Landfill's remaining yearly capacity. Because the proposed project's total construction waste generated would represent 0.5 percent of the Yolo County Central Landfill's remaining 299,000 tons per year capacity, the construction waste of the proposed project could be accommodated by the existing capacity of the Yolo County Central Landfill.

Once constructed, residents living at the proposed project site would generate waste. The City of Davis estimates that residents of the City produced approximately 2.6 pounds of waste per resident per day in 2013.<sup>46</sup> With 708 proposed beds, residents during the operation of the project would be anticipated to generate 1,841 lbs of waste per day (0.92 tons), or 335.8 tons of waste per year. Operational waste generation of 0.92 tons per day would equal approximately 0.05 percent of the Landfill's total daily capacity, and 0.1 percent of the Landfill's remaining daily capacity. Over the course of an operational year, 335.8 tons would represent 0.06 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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<sup>45</sup> U.S. Environmental Protection Agency. *Characterization of Building-related Construction and Demolition Debris in the United States*. June 1998

<sup>46</sup> City of Davis. *Davis Integrated Waste Management Plan*. July 2013.

It should be noted that in 2015, California achieved a residential waste diversion rate of 63 percent.<sup>47</sup> The diversion rate represents waste diverted from the landfill, which is recycled or composted, and the application of this diversion rate would reduce the amount of waste being deposited in the Yolo County Central Landfill estimated above. Additionally, the City 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. The proposed project falls under the Tier 1 standards, and thus would be required to divert at least 65 percent of the construction and demolition waste. 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 recently 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 above.

Given the above discussion, 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, the proposed project would result in a *less-than-significant* impact related to solid waste.

Mitigation Measure(s)

*None required.*

**4.12-4 Gas, electric, and telecommunication facilities. Based on the analysis below, the impact is less than significant.**

Currently, the project site is developed with ten single-family residences and 14 apartment units; however, four of the single-family residences are vacant. The proposed project would involve the replacement of the existing structures with a total of 130 residential units. Operation of existing structures on the project site creates demand for gas, electricity and telecommunications service. The analysis within this section of the EIR will consider the

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<sup>47</sup> 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.

potential increase in demand of gas, electricity and telecommunications services that could occur due to operation of the proposed project.

Natural Gas and Electric Facilities

The on-site residential structures are currently connected to electrical infrastructure, and are assumed to be connected to natural gas infrastructure as well. To determine the potential impacts related to natural gas and electricity consumption, both the potential demand from the proposed project and the current demand from the existing structures were estimated using California Emissions Estimator Model (CalEEMod) software version 2016.3.1. Modeling assumptions for the proposed project are discussed in Section 4.2, Air Quality and GHG Emissions, of this EIR. Because limited information exists in regards to the existing structures, CalEEMod default values were used to model the 20 operating on-site residential units. The estimated electricity and gas consumption for the existing development and the proposed development, as well as the net increase in energy demand, are presented in Table 4.12-13 below.

<b>Table 4.12-13</b>		
<b>Estimated Electricity and Natural Gas Consumption</b>		
	<b>Electricity (kWh/yr)</b>	<b>Natural Gas (kBtu/yr)</b>
Proposed Project	585,999	1,541,440
Existing Residential Developments	121,989	419,681
Net Increase	464,010	1,121,759
<i>Source: CalEEMod December 2016 (Appendix E).</i>		

As shown in the table above, operation of 130 residential units on the project site would increase the total energy and natural gas demand from the project site. However, natural gas and electrical infrastructure is currently located on-site. Therefore, additional connections to such infrastructure or new connections for the proposed project could be made without the need for substantial off-site improvements. 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 is anticipated to have adequate capacity to handle the increase in energy and natural gas service demand from the proposed project.

Telecommunication

The proposed project is intended to provide off-campus housing for UC Davis students. New educational technologies have resulted in education being one of the largest users of broadband services. Online applications such as teleconferencing, streamed classroom lectures, online courses, and internet research lead to high bandwidth demands per student.<sup>48</sup> Due to the large bandwidth demand of students, broadband telecommunications access would be needed for the proposed project. Broadband consists of either fiber optic,

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<sup>48</sup> Magellan Advisors, LLC. *Final Yolo Broadband Strategic Plan*. March 26, 2015.

copper wire, or wireless systems. Among these options, fiber-optic has the greatest bandwidth potential, and is routinely installed during construction of new developments.

The City of Davis has at least four fiber routes that currently follow the UPRR tracks. Connection points to these major fiber routes exist within the City of Davis, and are situated within communications vaults and equipment cabinets. Telecommunications providers are on-demand services, generally expanding their systems in response to demand, and would be anticipated to provide extensions of existing infrastructure to the project site as required. Thus, the proposed project could include extension of fiber optic lines from existing intercity connection points to the project site in order to bring broadband service to the project site.

Because the main fiber optic route in the City follows the UPRR tracks, which are adjacent to the northern boundary of the project site, extension of the existing fiber optic lines could be accomplished with minimal, if any trenching. The close proximity of the project site to existing fiber optic lines would ensure adequate access to telecommunications on the project site, and the minimal connection or extension activity that may be needed would not be anticipated to result in significant environmental impacts.

#### Conclusion

Due to the presence of existing electrical and natural gas infrastructure on the project site, the proposed project would not require major infrastructure improvements related to natural gas or electricity service. Additionally, the proposed project is located in proximity to existing telecommunications infrastructures, which the project is anticipated to connect to without requiring major infrastructure improvement or significant off-site construction. Therefore, overall, the proposed project's impacts related to gas, electric, and telecommunications resources is anticipated to be *less than significant*.

#### 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.

### **4.12-5 Development of the proposed project, in combination with future buildout in the City of Davis, would increase demand for additional utilities. Based on the analysis below, the project's incremental contribution to this cumulative impact is *less than cumulatively considerable*.**

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

#### Water Supply

The project would be served by the City of Davis with treated surface water from the Woodland Davis Water Project, and, during times when demand exceeds the supply of surface water, from deep aquifer well water. As discussed in Impact 4.12-2, the proposed project would be anticipated to consume 14.7 mgd, which can be accommodated without the need for new or expanded water entitlements. As shown in Table 4.12-9 and Table 4.12-10, 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 Davis Innovation Center projects. Although the proposed project would involve development of the project site with a higher density than anticipated by the 2015 UWMP, as shown in Table 4.12-9 and Table 4.12-10, sufficient capacity exists within the City's water supply to accommodate the proposed project and other anticipated projects. 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 4.12-9 and Table 4.12-10, 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 system is adequately sized to accommodate future, projected domestic water demands, including the proposed project, within the City service area, and the project's incremental contribution to cumulative impacts related to water supply would be less than cumulatively significant.

#### Wastewater

The WWTP is being improved to provide an increased treatment capacity. Once the WWTP improvements are complete, the WWTP would be sized to accommodate 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 4.12-14 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.

<b>Condition</b>	<b>Average Dry Weather Flow (mgd)</b>
WWTP Capacity	6.0
Existing Conditions	4.34
General Plan Buildout	5.05
Remaining Capacity	0.95
<b>Proposed Development Contribution</b>	
Mace Ranch Innovation Center / Triangle	0.11
Nishi Project	0.18
Lincoln40	0.04

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

As shown in Table 4.12-14, the WWTP is anticipated to have a remaining capacity of 0.95 mgd with buildout of the City’s General Plan. Proposed projects not included in the City’s General Plan, such as the Mace Ranch Innovation Center, the Triangle, and the Nishi Project would result in a cumulative ADWF demand of 0.29 mgd.<sup>49</sup> Therefore, the WWTP would have a remaining capacity of 0.71 mgd. The proposed project’s ADWF is anticipated to be 0.04. As such, the WWTP would have adequate capacity to serve the proposed project and cumulative development within the City.

To determine whether the wastewater conveyance system would have adequate capacity to serve the project area under cumulative buildout conditions, Cunningham Engineering determined the build-out potential of the sewer shed area based on the current land use designations of the areas within the surrounding sewer shed (see Figure 4.12-5). Wastewater generation rates for the existing and proposed land uses for the shed area were then used to determine the amount of wastewater anticipated for the project sewer shed area under cumulative build-out conditions.

The City considers existing pipes to be at full capacity when the anticipated flow rate equals 70 percent of a pipe’s design capacity. In the project area, all segments of sewer piping are anticipated to be below 70 percent capacity in cumulative conditions except for the pipe reach depicted on Figure 4.12-5, between the intersection of L Street and 2<sup>nd</sup> Street and L Street and 3<sup>rd</sup> Street. The segment in question, identified by Cunningham Engineering as pipe reach C to D, is anticipated to reach 71 percent capacity in cumulative buildout conditions for the sewer shed in question.<sup>50</sup> Although cumulative development of the project area, including the proposed project, would exceed the City’s recommended 70 percent capacity, the increase in wastewater of one percent would equal a change in depth

<sup>49</sup> West Yost Associates. *Technical Memorandum: Impacts of Innovation Center/Nishi Property Development on Wastewater Treatment Plant Capacity*. April 2, 2015.

<sup>50</sup> Cunningham Engineering. *Lincoln 40 Shed Sewer Calculations* [Figure 2]. February 1, 2017.

of 0.0067 inches within the eight-inch pipe. Cunningham Engineering concluded that the existing eight-inch pipe could accommodate such an increase in depth, without resulting in a substantial change from the City's 70 percent target capacity.<sup>51</sup> The City reviewed Cunningham Engineering's calculations and concluded that the 71 percent capacity would be within the practical limits of the 70 percent capacity goal, and upsizing the pipe reach C to D would not be necessary.<sup>52</sup> As such, the increased wastewater generated by the proposed project and cumulative development within the project's sewer shed could be accommodated by existing sewer shed wastewater infrastructure; 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. In fact, 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 2081. The addition of 0.92 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's demand on solid waste services could be accommodated by existing solid waste facilities, and the project's incremental contribution to cumulative impacts related to solid waste would be less than cumulatively significant.

### Energy, Natural Gas

The existing residences are currently provided gas and electricity service by PG&E. The proposed project would replace the existing residences with a new residential development. Therefore, 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 these services, but would be accommodated by PG&E. Therefore, the proposed project's incremental contribution to cumulative demands on gas and electric services would be less than cumulatively considerable.

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<sup>51</sup> Cunningham, Charles. P.E., CEO, Cunningham Engineering. Personal Communication [email] with Dianna Jensen, City Engineer, City of Davis Public Works Department. February 3, 2017.

<sup>52</sup> Dianna Jensen, City Engineer, City of Davis Public Works Department. Personal Communication [email] with Charles Cunningham, P.E., CEO, Cunningham Engineering. February 15, 2017.



### Telecommunications

Telecommunications services are provided on-demand, and service providers expand their distribution systems as needed to accommodate growth. Cumulative projects would increase demand for these services, but such projects would be accommodated by any one of a number of providers in the Davis area. Therefore, the project's telecommunications needs would be accommodated by these providers, and demand would not exceed supply. Therefore, the project's incremental contribution to cumulative demands on telecommunications services would be less than cumulatively considerable.

### 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. 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.*