

5.15 - Utilities and Service Systems

5.15.1 - Introduction

This section addresses the existing conditions related to utilities and service systems. The topics of water, wastewater, drainage/flood control, solid/hazardous waste are discussed in detail in this section. Primary information for the utilities and services systems was obtained from various sources. Wastewater information was obtained from the 2006 Wastewater Master Plan prepared by Brown and Caldwell in 2006 and the Wastewater Technical Report prepared for the General Plan Update by Blair, Church & Flynn in 2013 (see Appendix J-1). Water facility information was obtained from the 2012 City of Fresno Metropolitan Water Resources Management Plan prepared by West Yost Associates in 2011. Water supply information was obtained from both the 2008 Urban Water Management Plan prepared by West Yost Associates in 2008 as well as the 2010 Urban Water Management Plan prepared by West Yost Associates in 2012. Storm drainage information was obtained from the 2004 District (Fresno Metropolitan Flood Control District) Services Plan Master EIR prepared by EIP Associates in 2006 (Draft MEIR) and 2007 (Final MEIR) and the Storm Drainage Technical Report prepared for the General Plan Update by Blair, Church & Flynn in 2013 (see Appendix G-1).

5.15.2 - Environmental Setting

Study Area for Project Impacts

The study area for project impacts regarding utilities and service systems is the City of Fresno Planning Area.

Study Area for Cumulative Impacts

The study area for the analysis of utilities and service systems cumulative impacts varies depending on the utility and service system being analyzed as described below:

Stormwater Drainage - The study area for cumulative impacts regarding stormwater drainage is the Fresno-Clovis Metropolitan Area because the Fresno Metropolitan Flood Control District (District) includes an area of approximately 400 square miles and covers almost the entire portion of the Fresno-Clovis Metropolitan Area.

Water Supply - The study area for cumulative impacts regarding water supply is the City of Fresno Planning Area and the groundwater basins from which the Planning Area derives water.

Wastewater - The study area for cumulative impacts regarding wastewater is the City of Fresno Planning Area and the City of Clovis because the City of Fresno acts as the Regional Sewering Agency and is responsible for operating the Fresno/Clovis Regional Wastewater Reclamation Facility.

Solid Waste - The study area for cumulative impacts regarding solid waste is the entire County of Fresno because waste from throughout the County could be accommodated at primarily three landfills within the County including the American Avenue Landfill in Kerman, Clovis Landfill in Clovis, and the Coalinga Landfill in Coalinga.

Water Supply

The water supply section discusses the existing condition of the City's water supply and treatment and distribution systems.

Key planning documents for City of Fresno water resources include the 2012 Fresno Metropolitan Water Resources Management Plan (2012 Metro Plan) and the 2010 Urban Water Management Plan (UWMP).

The City of Fresno Department of Public Utilities (DPU) provides potable water to the majority of the City, and some users within the portion of the Planning Area outside of the City limits. Fresno's primary source of potable water is groundwater stored in an aquifer. However, in 2004 the City's first surface water treatment facility (Northeast Surface Water Treatment Facility [NESWTF]) came on line and began delivering approximately 4,060 acre-feet in 2004 to residents in northeast Fresno. By 2010, the NESWTF delivered approximately 18,474 acre-feet of treated surface water (2010 Urban Water Management Plan, 2012).

The 2010 UWMP was adopted by the City Council in November 2012. It describes the current and planned water conservation programs, provides a water shortage contingency plan should it need to be implemented in the event of a severe water shortage or water supply emergency and a future water supply plan for a variety of water sources including treated surface water, groundwater and recycled water. Also included in this 2010 UWMP is an aggressive water conservation plan to reduce demand throughout the City's service area. The 2010 UWMP is in accordance with the Urban Water Management Planning Act that stipulates that every urban water supplier in California supplying water directly or indirectly to 3,000 or more customers or supplying more than 3,000 AF of water annually shall adopt and submit an Urban Water Management Plan to the California Department of Water Resources. Failure to submit a plan, as required, could result in ineligibility to receive certain grants or receive drought assistance from the State.

Groundwater Supply

The City lies within the Kings Sub-basin, which is part of the larger San Joaquin Valley Groundwater Basin, and extracts a majority of water to meet its demands from this underground aquifer. Historically, the groundwater levels in the Fresno area have declined by an average of 1.5 feet per year since 1990 (Urban Water Management Plan, 2008). In the past 80 years, the water level has decreased from 30 feet below ground surface to more than 128 feet below ground surface, according to 2009 data provided by the City. According to Figures 4.4 and 4.5 provided in the previous Urban Water Management Plan adopted in 2008, there was a cone of depression from Herndon Avenue in the north to Jensen Avenue in the south and from Maple Avenue to Brawley Avenue in the east-west direction in both the lower and upper aquifer zones. A groundwater mound is located near the Fresno-Clovis Regional Wastewater Reclamation Facility (Regional Facility) as a result of the disposal of treated effluent at the Regional Facility percolation basins.

Groundwater used by the City to meet its demands is replenished by three different methods:

- Natural recharge
- Subsurface inflow
- Intentional recharge

Natural recharge occurs through rainfall, irrigation, canal and stream flows that seep into the soil and replenish the aquifer below. Based on City data, the natural recharge was approximately 24,400 AF in 2010. According to the Metropolitan Water Resources Management Plan (Metro Plan Update) prepared in 2011, the average annual natural recharge is 37,000 AF within the Planning Area. As additional development occurs throughout the Planning Area, there will be less pervious surfaces to allow natural recharge to occur. However, as the City annexes portions of the Planning Area, the amount of natural recharge allocated to the City will increase. At buildout, the natural recharge is estimated to be approximately 27,000 AFY.

Subsurface recharge occurs from the movement of groundwater from external sources such as the Sierra Nevada moving into the local aquifer. Since the groundwater table surrounding the City's Planning Area is higher than inside the Planning Area, subsurface water tends to flow from surrounding areas with a higher groundwater table into the aquifer within the Planning Area that has a lower groundwater table. Based on City data, the annual subsurface inflow to the City is approximately 22,500 AF in 2010. By the year 2025, the City anticipates that groundwater operations (i.e., subsurface inflows and outflows) would be balanced and subsurface flows will not be directed to the Planning Area. Therefore, during and after the year 2025, subsurface water flows will not be a water supply source for the City.

Intentional recharge is provided by directing surface water into the underground aquifer by means of groundwater recharge basins located throughout the Planning Area. Currently, the City's primary recharge facility is Leaky Acres, located just northwest of Fresno-Yosemite International Airport. Other recharge facilities include Fresno Metropolitan Flood Control District (FMFCD) storm drainage basins and the Alluvial Groundwater Recharge System (AGRS) owned and operated by the City of Clovis. Based on the 2008 UWMP, the average intentional recharge between 1985 and 2007 was approximately 44,200 AF/year. The maximum intentional recharge was approximately 62,000 AF/year in 2003. Based on information provided by City staff, the intentional recharge quantity in 2009 was approximately 54,600 AF and in 2010, the intentional recharge was approximately 53,100 AF.

Based on the natural groundwater recharge (24,400 AF), subsurface inflow (22,500 AF), and intentional recharge (53,100 AF) that occurred in 2010, the total groundwater recharge during normal year supply is approximately 100,000 AF. At buildout, the City anticipates that the natural groundwater recharge will increase to 27,000 AFY, subsurface inflow will be 0 AFY, and intentional groundwater recharge will increase to 75,100 AFY due to an increase in the capacity of surface water treatment. The total groundwater recharge at buildout will be approximately 102,100 AFY.

The City currently has approximately 272 active wells that pump an average of 146 million gallons of water per day (MGD) (approximately 448 acre-feet per day). Groundwater pumping data provided by the City indicates that approximately 128,578 AF was pumped in 2010. Between 2006 and 2010, the City pumped an average of approximately 139,207 AFY. This average groundwater pumping has exceeded the current estimated groundwater safe yield of approximately 100,000 AFY.

In 2004, the NESWTF located at Chestnut and Behymer Avenues began operation. The NESWTF has reduced the dependence on groundwater pumping by the City that was needed to meet water demand. Prior to NESWTF operation, 100 percent of the City's water demand was met through groundwater pumping. The addition of the NESWTF has reduced the percentage of total water demand provided by groundwater from 100 percent prior to 2004 to approximately 87 percent in 2010.

In the near future, groundwater will continue to be an important part of the City's supply but is not planned to be relied upon as heavily as has historically been the case. The 2010 UWMP projects that groundwater pumped by the City will decrease from approximately 128,578 AF/year in 2010 to approximately 85,000 AF/year buildout of the General Plan Update. This would represent a decrease in the groundwater percentage of total water supply from 87 percent to 36 percent. This reduction in groundwater pumping will recharge the aquifer by approximately 15,000 acre-feet per year because the safe yield is approximately 100,000 acre-feet per year. In order to meet the projected decrease, the City is planning to rely on expanding their delivery and treatment of surface water supplies and groundwater recharge activities.

Surface Water Supply

The City entered into a contract with the Fresno Irrigation District (FID) in 1976 that granted to the City a percentage share of FID's water entitlements from the Kings River. The contract pertained only to natural flows in the Kings River. It excluded Class 2 entitlement water provided to FID by the United States Bureau of Reclamation (USBR) and any water stored in Pine Flat Reservoir. The percentage share of water available to the City is based on the ratio of the total area annexed by the City to the total area within the FID water service area. Therefore, water available to the City will increase over time as the City annexes additional lands within the FID service area.

The percent allocation of FID's rights to normal year natural flows in the Kings River to the City of Fresno was 23.6 percent in 2005. The percent allocation of FID's rights to the natural flows in the Kings River to the City is projected to increase to approximately 32.4 percent by buildout of the General Plan Update. This represents an increase from 92,200 AF/year in 2005 to 126,500 AF/year at buildout of the General Plan Update during normal conditions.

In addition to the Kings River water contract with FID, the City has another agreement with FID to exchange treated wastewater effluent for additional river water from FID's water entitlement from the Kings River or their USBR Class 2 water from the San Joaquin River. In exchange for 30,000 AF/year of treated effluent, FID will provide the City with 13,800 AF/year (46 percent of the 30,000 AF/year). Information included in the 2010 UWMP indicates that the City is not currently using the effluent exchange surface water allocation from FID. For future water supply planning purposes, the

City can receive up to 13,800 AF/year of water from FID through the Wastewater Recycle Exchange water program.

The City also has a contract with the United States Bureau of Reclamation (USBR) for Class 1 water from the San Joaquin River water that runs through 2045. The City’s entitlement is 58,200 AF/year of Class 1 water during normal years. This entitlement is in perpetuity.

Table 5.15-1 provides a summary of the existing surface water supply available to the City of Fresno during normal years.

**Table 5.15-1
 Available Surface Water Supplies to the City of Fresno during Normal Years**

Source of Surface Water ¹	Quantity, Year 2010 acre-feet per year (Normal Year) ¹
Fresno Irrigation District – Kings River	97,900
U.S. Bureau of Reclamation – Central Valley Project	58,200
Wastewater Recycle Exchange with Fresno Irrigation District	13,800 ²
Total Available Surface Water Supplies	169,900
¹ Data obtained from the City of Fresno 2010 Urban Water Management Plan	
² The City is not currently using the effluent exchange surface water allocation from the Fresno Irrigation District.	
Source: FirstCarbon Solutions, 2014	

Although 169,900 AFY would be available to the City of Fresno for normal year conditions, the actual surface water available for delivery was 193,916 AF (132,541 AF from FID and 61,375 AF from USBR). The City used only 18,474 AFY of the 193,916 AF of surface water that they received to meet the City’s water demand. An additional 53,121 AF was used for intentional recharge. The remaining 122,321 AF of surface water was distributed to others.

Urban Water Demand

The average per capita water consumption since 1991 has been an average of approximately 295 gallons per capita per day (gpcd). The City implemented the installation of water meters on all residential connections. Residential water demand is projected to decrease by 10 percent as a result of increased customer water awareness due to meter installation.

The 2010 UWMP identifies the water demand within the City for 2010 as 132,347 AF with a per capita water use of 261 gpcd. In addition, the 2010 UWMP provides a water use by land use sector. Following is a break down for water consumed within the City: Single Family (74,403 AFY), Multi-Family (21,087 AFY), Commercial/ Institutional/Government (20,754 AFY), Industrial (6,660 AFY), Landscape (9,286 AFY), and Other –Miscellaneous (157 AFY).

Existing Water Distribution System

The City Water Division serves an area of more than 110 square miles. The City provides water to the Pinedale County Water District for use on approximately 20 parcels within the District’s

boundary. The City Water Division does not supply water to three community water systems within the Planning Area. These water systems include the Bakman Water Company, the Park Van Ness Mutual Water Company, and California State University Fresno. In addition, there are private groundwater users in County islands located throughout the Planning Area.

The City of Fresno currently operates 272 groundwater wells located throughout the City. The total production capacity for the City of Fresno is 419 MGD (approximately 1,286 acre-feet per day), with an average flow rate of 146 MGD (approximately 448 acre-feet). The wells are connected to a transmission and distribution main system generally arranged in a half-mile grid configuration.

The NESWTF located in the northeast part of the City was completed in 2004 and supplements the groundwater supply. The capacity of the plant is 30 MGD, and treats surface water to drinking water standards. Surface water is supplied to the facility from the San Joaquin and Kings River via the FID Enterprise Canal.

The water distribution network is divided into four quasi-pressure zones that prevent water flowing freely from higher areas of the City to lower areas of the City. The zones are separated by valves that either impede flow or prevent it altogether.

The water system is currently monitored and controlled by a Supervisory Control and Data Acquisition (SCADA) system. The system controls on and off pressure settings for wells within each of the sub-areas within the water system.

The City's water distribution system includes approximately 1,780 miles of water system pipelines. The pipelines range in size from 4 inches to 48 inches and consist of materials such as asbestos-cement, cast iron, ductile iron, steel and polyvinyl chloride (PVC).

Three storage tanks are used within the City's water system. One is located at the NESWTF site and the other is near the intersection of Clovis Avenue and California Avenue in southeast Fresno. The NESWTF tank has a storage capacity of 1.5 million gallons (MG). The southeast Fresno tank has a storage capacity of 2 MG. The third storage tank is located at Dakota and Armstrong Avenues and has a storage capacity of 3 MG.

Three booster pump stations are part of the water distribution system that consists of Booster Pump 1, Booster Pump 2 and Booster Pump 4. These pump stations transfer water from the various pressure zones.

Wastewater

Wastewater Treatment and Disposal

The City of Fresno owns and operates two wastewater treatment facilities that serve the Fresno metropolitan area. They are the Fresno/Clovis Regional Wastewater Reclamation Facility (Regional Facility) and the North Fresno Wastewater Reclamation Facility (NFWRF).

Fresno/Clovis Regional Wastewater Reclamation Facility

The Regional Facility is located southwest of the City in the area generally bounded by Jensen, Cornelia, Central and Chateau Fresno Avenues. It provides wastewater treatment for a service area that includes most of the Cities of Fresno and Clovis, and some unincorporated areas of Fresno County. The Regional Facility received and treated approximately 72,302 acre-feet (AF) of wastewater during 2011, representing an annual average daily flow of approximately 64.5 million gallons per day (MGD). The quantity of wastewater received and treated by the Regional Facility has been declining since 2006, when it peaked at a total of approximately 80,801 AF, representing an annual average daily flow of approximately 72.1 MGD. The permitted wastewater treatment capacity of the Regional Facility is currently 80.0 MGD as an annual monthly average flow, and 88.0 MGD as a maximum monthly average flow. The City is currently evaluating upgrades and modifications to the existing Regional Facility that may result in a capacity rating increase of 15.0 MGD. The City of Clovis owns 9.3 MGD of wastewater treatment capacity at the Regional Facility, and the City of Fresno owns the remaining capacity.

The Regional Facility employs an activated sludge wastewater treatment process, which produces un-disinfected secondary effluent. Most of the effluent is discharged to an array of percolation basins, where it percolates through the underlying soil strata and into the groundwater beneath the basin. However, some of the effluent is recycled by direct delivery to nearby farmland where it is used for restricted irrigation for feed/fodder and fiber crops. In addition, some of the percolated effluent is extracted from the groundwater beneath the basins by pumping and is recycled for irrigation by delivery to the Fresno Irrigation District (FID) canal system. During 2011, 10,896 AF of effluent was delivered directly to nearby farmland, and 5,150 AF was extracted and delivered to the FID canal system for a total of 16,046 AF recycled for irrigation use. This represents approximately 22% of the wastewater received and treated by the FCRWRF in 2011. During the period from 2000 through 2011, the proportion of wastewater treated and recycled for irrigation use in this manner has varied irregularly from 22% to 52%.

The use of the Regional Facility percolation basins for effluent disposal has resulted in a groundwater mound beneath and adjacent to the FCRWRF site, and the local groundwater level in that area is higher than it would otherwise be without the addition of the Regional Facility effluent. The top of the groundwater mound ranges in depth from 25 to 60 feet below ground surface (bgs), and it extends well beyond the perimeter of the Regional Facility site, such that it affects groundwater contours throughout an area of approximately 25 square miles. The diversion and/or extraction of Regional Facility effluent for beneficial recycled water uses such as irrigation, rather than effluent disposal via the percolation basins, reduces related groundwater mounding and effluent-related effects on background groundwater quality.

The City of Fresno commissioned a team of engineering consultants to prepare the City's Recycled Water Master Plan, which is currently expected to be formally adopted by the City in August 2012. The master plan included an evaluation of potential recycled water use areas throughout the City, and evaluated a number of alternatives for the production and delivery of recycled water. The recommended alternative includes a proposed tertiary treatment facility with a planned capacity of 30 MGD (approximately 33,600 AF/year) which will be located at the Regional Facility and is

currently under preliminary design. The tertiary treatment facility will produce disinfected tertiary treated recycled water for irrigation, certain industrial uses, groundwater recharge, and other allowable recycled water uses. The City plans to begin construction of the tertiary treatment facility, together with a recycled water distribution system for delivery of recycled water to use areas throughout the City, within the next several years.

North Fresno Wastewater Reclamation Facility

The North Fresno Wastewater Reclamation Facility is located in north Fresno, near the intersection of Copper Avenue and Cedar Avenue. It was constructed in late 2006 to provide wastewater treatment service for residential and commercial development in the surrounding area of north Fresno. The NFWRF employs a sequencing batch reactor (SBR) treatment process for secondary treatment, cloth media filtration for tertiary treatment, and an ultraviolet system to produce disinfected tertiary treated effluent. The effluent is used for golf course irrigation at the nearby Copper River Country Club. Effluent in excess of the quantity that can be used for golf course irrigation is de-chlorinated and discharged to a nearby Fresno Metropolitan Flood Control District (FMFCD) stormwater basin.

The permitted capacity of the NFWRF is 0.71 MGD, as an average monthly flow, and 1.07 MGD, as a maximum daily flow. The City's master plan for the NFWRF calls for ultimate expansion to an average monthly flow capacity of 1.07 MGD upon full development of the NFWRF service area.

Other Area Wastewater Treatment Facilities

The City of Clovis owns and operates the Clovis Sewage Treatment / Water Reuse Facility (STWRF), located near the intersection of Ashlan Avenue and McCall Avenue, southeast of the City of Clovis. It produces disinfected tertiary recycled water used for irrigation and possible compatible industrial uses. Phase 1 of the STWRF is in operation, with an average flow capacity of 2.8 MGD. Future Phases 2 and 3 are planned to have average flow capacities of 5.6 MGD and 8.4 MGD, respectively.

Malaga County Water District owns and operates a wastewater treatment plant south of the City of Fresno, near the intersection of Maple Avenue and Central Avenue. It provides wastewater treatment service only for properties within the boundaries of Malaga County Water District.

There are also several small private wastewater treatment facilities in the Fresno metropolitan area, including facilities owned and operated by the Pinedale Public Utility District and the Pinedale County Water District, that provide wastewater treatment service for individual subdivisions or developments.

Wastewater Collection System

The City of Fresno owns and maintains the majority of the wastewater collection systems that convey wastewater to the FCRWRF, and all of the wastewater collection system that conveys wastewater to the NFWRF. The City's wastewater collection system consists of more than 1,380 miles of gravity flow pipelines, ranging in size from 4 inches to 84 inches in diameter, and ranging in age from new to more than 100 years old. The system also includes some pressure flow pipelines, by which pumped wastewater is conveyed to a point of discharge usually tributary to a gravity flow

pipeline. Wastewater collection system pipelines consist of a number of different pipe materials, but the majority of the gravity flow pipelines consist of polyvinyl chloride (PVC) pipe, vitrified clay pipe (VCP) or concrete pipe, which includes both reinforced concrete pipe (RCP) and standard or non-reinforced concrete pipe (SCP). Together, these pipe materials account for approximately 98.4 percent of the wastewater collection system pipelines.

Cementitious pipe materials such as RCP and SCP are subject to microbially induced corrosion (MIC), which is caused by microbiological processes in the sewer environment that result in the formation of sulfuric acid on surfaces exposed to the sewer atmosphere, the air space above the wastewater flow in a partially full pipe. Most newer RCP pipelines are manufactured with an interior plastic liner that protects the pipe from the effects of MIC. Older, unprotected pipes can be corroded by MIC to the point of loss of structural integrity and pipe failure. The effects of MIC have been observed in some of the older RCP and SCP pipelines in the City's wastewater collection system.

The City of Fresno commissioned a team of engineering consultants to prepare the 2006 Wastewater Collection System Master Plan. The master plan effort included hydraulic modeling of the wastewater collection system to evaluate system capacity for both then-existing conditions and full build-out conditions under the City's 2025 General Plan. A number of capacity-deficient sewers were identified, and recommendations for capacity relief projects were developed.

The Wastewater Collection System Master Plan also incorporated the results of a number of prior sewer inspection and evaluation efforts, including recommendations for prioritized sewer rehabilitation projects, most or all of which were necessary as a result of MIC processes. The master plan also included a number of trunk sewer projects and infill projects identified by the City of Fresno. The master plan incorporated all of the various types of recommended sewer projects in a Capital Improvement Program covering 133 projects having an estimated cost of \$288.0 million (in 2004 dollars). The projects were programmed for implementation during the period from 2006 through 2025. The City of Fresno has been regularly implementing various elements of the Capital Improvement Program since the adoption of the Wastewater Collection System Master Plan.

As required by the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, the City of Fresno prepared the 2009 Sewer System Management Plan (SSMP) for the Wastewater Collection System. The SSMP provides a framework for the proper management, operation, and maintenance all elements of the wastewater collection system, with the objectives of reducing and preventing sanitary sewer overflows (SSOs), and mitigating any SSOs that may occur. An SSO is a release of untreated or partially treated wastewater resulting in public exposure, regardless of whether the wastewater reaches waters of the United States. SSOs also include wastewater backups into buildings and onto private property that are caused by blockages in the City's portion of the sanitary sewer system.

All of the mandatory elements of the SSMP were already in place and in use by the City of Fresno through other programs and ordinances, such as the Fresno Municipal Code, the Wastewater Collection System Master Plan, the Fats, Oils and Grease (FOG) Control Program, the Sanitary System Overflow Prevention and Response Plan, Performance Measures and Public Information/Education

opportunities. The City of Fresno operates the wastewater collection system under the SSMP and these related programs and ordinances to accomplish the SSMP objectives.

Drainage

Stormwater collection and disposal, and flood control for the City of Fresno, City of Clovis, and the unincorporated areas within the City of Fresno's sphere of influence are provided by the Fresno Metropolitan Flood Control District (FMFCD). The FMFCD is a special district created by the State of California Legislature and ratified by the voters of the district in 1956. The District has more than 170 urban watersheds that collect stormwater runoff and dispose of the runoff in retention basins, local canals, or the San Joaquin River. Each urban watershed, called a drainage area by FMFCD, consists of a collection system and, in most cases, a retention basin to store and dispose of the runoff. Three drainage areas are pumped directly into a nearby canal and six drainage areas have collection systems that discharge to the San Joaquin River. Pipeline collection systems have diameters that range from 15 inches to 108 inches. Retention basins range in size from 5 acres to 25 acres, with most being 8 to 10 acres in size. The flood control system consists of three dams and reservoirs, five detention basins, one diversion channel, and up to 175 miles of rural stream channels.

Stormwater Collection and Disposal

FMFCD provides drainage service to the Fresno metropolitan area. In order to provide this service, the District has organized the metropolitan area into over 170 urban drainage areas or watersheds. Watersheds are delineated along topographic boundaries and are limited in size to between 200 acres to 600 acres. The area limitation reduces the size of the required collection facilities and disposal facilities. The service is provided through the combination of surface drainage improvements, chiefly curbs and gutters, that direct runoff to storm drainage inlets, which collect the runoff and convey the runoff to underground pipeline collection systems. The collection systems convey the stormwater to disposal facilities, which in the majority of cases are excavated, unlined basins. In three cases, the collection systems discharge to pump wet wells from which the stormwater is lifted into an adjacent canal, and in six cases, the stormwater is discharged into the San Joaquin River. Two of these systems discharge directly to the San Joaquin River and four discharge to a water quality basin before discharge to the river occurs.

The collection systems are designed to provide one foot of freeboard in the pipeline collection system designed to convey runoff rates generated by rainfall intensity up to and including a 50% probability of occurrence (a 2-year return frequency). There are exceptions to this design standard in areas of the City where older drainage systems were installed prior to the formation of the District, or constructed in the very early years of the District, and shifts in land use densities have eroded the level of service. The District documents the deficiencies and develops master planned solutions to these deficiencies as they are identified.

Retention basins are designed to provide storage for up to 6 inches of rainfall on the drainage area watershed given typical runoff to rainfall ratios used for urban drainage design. Again, there are exceptions to this design standard, notably in those retention basins constructed prior to 1969 when

the design criteria was changed to increase the storage volume. The change resulted from the extreme rainfall events of the spring of 1969 and the resulting flooding at the then-existing basins.

Water quality basins are designed in accordance with the US Environmental Protection Agency's design standards to remove sediments and trash prior to discharge of stormwater to the San Joaquin River. They provide quiescent conditions for settling of suspended solids within a holding basin prior to discharge from the basin via an overflow weir. The water quality basins alternate between wet and dry, depending on the season and amount of rainfall that has occurred within the drainage area.

The District has utilized three means to implement drainage systems for the metropolitan area. One method has been to use Community Block Grants and low interest infrastructure loans from the State of California to construct drainage facilities in the older, previously developed areas of the City. A second method has been to form assessment districts under the provisions of the 1915 Bond Act. Assessment districts were formed based on drainage area boundaries, the parcels within the assessment districts were assessed a proportional share of the cost of the collection and disposal system, and the drainage system for the drainage area was constructed. The third and currently employed method is to collect drainage fees from parcels as they develop based on their prorated share of the cost of the drainage area collection and disposal systems. The implementing ordinance for the drainage fee structure is adopted by the City of Fresno, and the drainage fees are collected by the City when entitlements are granted or building permits are issued.

The District is a primary participant in groundwater recharge for the City of Fresno. Unlined retention basins provide recharge of both stormwater runoff and imported water from the San Joaquin River and Kings River. It is estimated that 80-percent of the stormwater that falls within the metropolitan area is recharged via the District's retention basins. The District has identified retention basins within the metropolitan area that have significant recharge capability. They utilize the Fresno Irrigation District (FID) canal system to deliver allocated water from the San Joaquin River and the Kings River to these basins where the water infiltrates through the underlying soil strata and into the groundwater beneath the basins. The District retention basins, largely in part through a cooperative agreement with the City, provide groundwater recharge for an estimated annual average of 30,000 AF of water.

Key FMFCD planning documents for stormwater collection and disposal, and flood control include:

- The Storm Drainage and Flood Control Master Plan. A geographical information system database that contains the master planned pipeline collection system status (existing, designed, or planned), collection system alignments and sizes, collection system hydrologic and hydraulic design calculations, and retention basin status (planned, purchased, developed), retention basin locations, and retention basin sizes.
- FMFCD District Services Plan, 2004. Contains a full description of the FMFCD storm drainage system master plan, stormwater quality programs, water conservation, and wildlife management plans.
- Draft and Final Master Environmental Impact Report for the 2004 District Services Plan.

Flood Control

The City of Fresno is located in the alluvial fans of numerous foothill streams and creeks that drain the western slope of the Sierra Nevada foothills. These streams include Big Dry Creek, Alluvial Drain, Pup Creek, Dog Creek, Redbank Creek, Mud Creek, and Fancher Creek. Numerous smaller, unnamed drainage courses also drain into the City from the rural areas east of the City. The District provides flood control measures on the major creeks for the 0.5-percent exceedance interval (200-year return frequency) flood flow event with a series of dams and detention basins located east of the City. These dams include Big Dry Creek Dam, Fancher Creek Dam, and Redbank Dam. The detention basins include the Alluvial Drain Detention Basin, Pup Creek Detention Basin, Redbank Creek Detention Basin, Fancher Creek Detention Basin, and Big Dry Creek Detention Basin.

The Big Dry Creek Dam was originally constructed in 1948 by the U.S. Army Corps of Engineers. It was subsequently raised and enlarged by the U.S. Army Corps of Engineers as part of the Redbank and Fancher Creek Flood Control Project in 1993 to provide a flood pool with 30,200 AF of storage. Redbank Creek Dam was constructed by the District in 1961. It provides a gross pool storage of 1,030 AF. The U.S. Army Corps of Engineers also constructed the Alluvial Drain Detention Basin in 1993, the Pup Creek Detention Basin in 1993, the Redbank Detention Basin in 1990 and the Fancher Creek Dam in 1991. The Redbank and Fancher Creek Flood Control Project was a jointly funded Federal, State, and local project. The District constructed the Fancher Creek Detention Basin in 2003 and recently completed the Big Dry Creek Detention Basin.

The District has master planned the Dog Creek, Pup Creek, and a portion of Redbank Creek channels to convey the 0.5-percent exceedance level flood flows within bank. The improvement of these channels will occur as funding and legal authority to proceed with the improvements are provided either through grants and purchase of right of way or through the entitlement process. Each of these channels are ephemeral streams that flow only during the latter parts of the wet season.

Solid Waste Disposal

Fresno diverts a majority of its solid waste away from landfills and into recycling and composting programs. Diversion conserves limited landfill space, keeps toxic chemicals and materials from contaminating landfills, and enhances the reuse of materials. In 2009, Fresno was ranked highest in the state among larger cities by the California Integrated Waste Management Board (CIWMB) for diverting 71 percent of its solid waste. A Council resolution commits the City to the goal of a 75 percent Waste Diversion Rate by the year 2012 and a Zero Waste goal by the year 2025. Recycling of construction & demolition is required for any City-issued building, relocation or demolition permitted project that generates at least 8 cubic yards of material by volume and all waste must be hauled to a City-approved facility (City of Fresno. Working paper 5: Resource Conservation. 2011).

The Solid Waste Division of the City of Fresno provides the following services: collection of residential and commercial solid waste, recyclables and greenwaste throughout the community at least once a week; disposes of solid waste at the County of Fresno landfill; provides and maintains containers; responds to customer complaints/concerns and provides roll-off and compactor services to residential, multi-family and commercial customers (City of Fresno Public Utilities. 2012).

Garbage disposed of in the City of Fresno is taken to Cedar Avenue Recycling and Transfer Station. Once trash has been off-loaded at the transfer station, it is sorted and non-recyclable solid waste is loaded onto large trucks and taken to the American Avenue Landfill located approximately six miles southwest of Kerman. American Avenue Landfill is owned and operated by Fresno County and began operations in 1992 for both public and commercial solid waste haulers. The American Avenue Landfill is a sanitary landfill, meaning that it is a disposal site for non-hazardous solid waste spread in layers, compacted to the smallest practical volume, and covered by material applied at the end of each operating day (City of Fresno Solid Waste, 2012).

The American Avenue Landfill (i.e. American Avenue Disposal Site 10-AA-0009) has a maximum permitted capacity of 32,700,000 cubic yards and a remaining capacity of 29,358,535 cubic yards, with an estimated closure date of August 31, 2031. The maximum permitted throughput is 2,200 tons per day (CalRecycle, 2014).

Other landfills within the County of Fresno include the Clovis Landfill with a maximum remaining permitted capacity of 7,740,000 cubic yards, a maximum permitted throughput of 2,000 tons per day, and an estimated closure date of 2047 (CalRecycle, 2014). There is also the Coalinga Landfill with a maximum remaining capacity of 1,930,062 cubic yards, a maximum permitted throughput of 200 tons per day, and an estimated closure date of 2029 (CalRecycle, 2014).

The City of Fresno and Fresno County co-sponsor two household hazardous waste drop-off events each year, one in the spring and one in the fall. Additionally, the County of Fresno provides a Door-to-Door program that provides household hazardous waste pickup for individuals who, because of special circumstances, cannot participate in the household hazardous waste drop off events held twice a year.

5.15.3 - Regulatory Setting

Following are the utilities and service systems regulations that are applicable to the Planning Area.

Sewer

2025 Fresno General Plan

E-18. Objective: Ensure provision for adequate trunk sewer and collector main capacities to serve existing and planned urban development and economic diversification, including existing developed uses not presently connected to the public sewer system with the Wastewater Master Plan.

E-18-d. Policy: Determine that adequate trunk sewer capacity exists or can be provided to serve proposed development prior to the approval of rezoning, special permits, tract maps, and parcel maps so that the capacities of existing facilities are not exceeded.

E-20. Objective: Ensure the provision of adequate sewage treatment and disposal by utilizing the Fresno-Clovis Regional Wastewater Treatment and Reclamation Facility as the primary facility, when economically feasible, for all existing and new development within the metropolitan area.

E-20-d. Policy: Monitor wastewater treatment plant flows and loadings to the extent feasible and consider the wastewater treatment impacts of land use changes when evaluating general plan amendment proposals.

E-21. Objective: Promote reduction in wastewater flows and develop facilities for beneficial reuse of reclaimed water and biosolids for management and distribution of treated wastewater.

E-21-a. Policy: Implement conservation and other programs and policies to reduce wastewater flows.

E-21-e. Policy: Rehabilitate existing infiltration basins and acquire additional sites for infiltration basins as needed.

County of Fresno: Revised 2000 General Plan

Goal PF-D. To ensure adequate wastewater collection and treatment and the safe disposal of wastewater.

Policy PR-D.4. Available Wastewater Treatment Capacity. The County shall limit the expansion of unincorporated, urban density communities to areas where community wastewater treatment facilities can be provided.

Policy PR-D.7. Sewer Master Plans. The County shall require preparation of sewer master plans for wastewater treatment facilities for areas experiencing urban growth.

Water

2025 Fresno General Plan

E-22. Objective: Manage and develop the City of Fresno's water facilities to ensure a safe, economical, and reliable water supply for existing and planned urban development and economic diversification.

E-22-b. Policy: Set adequate and appropriate conditions of approval for each new development proposal to ensure that the necessary potable water production and supply facilities are in place prior to occupancy.

E-22-d. Policy: Continue to evaluate existing water production and distribution systems and facilitate necessary repair or enhancement of damaged or antiquated facilities.

E-22-i. Policy: Mitigate the effects of development and capital improvement projects on the long-range water budget to ensure an adequate water supply for current and future uses.

County of Fresno: Revised 2000 General Plan

Goal PF-C. To ensure the availability of an adequate and safe water supply for domestic and agricultural consumption.

Policy PF-C.1. Retain Existing Water Supplies. The County shall actively engage in efforts and support the efforts of others within Fresno County to retain existing water supplies and to restore the water supplies that have diminished to the extent possible.

Policy PF-C.3. Surface Water Use. To reduce demand on the county's groundwater resources, the County shall encourage the use of surface water to the maximum extent feasible.

Policy PF-C.8. Water Master Plans. The County shall require preparation of water master plans for areas undergoing urban growth.

Policy PF-C.12. Adequate Sustainable Water Supply. The County shall approve new development only if an adequate sustainable water supply to serve such development is demonstrated.

Drainage and Flood Control

2025 Fresno General Plan

E-23-c. Policy: The City of Fresno shall coordinate with the Fresno Metropolitan Flood Control District in updating the Flood Control Master Plan as necessary to determine the optimum locations for drainage basins and other facilities necessary to serve urban development including planned urban intensification and the planned North Growth and Southeast Growth Areas.

E-23-h. Policy: The City of Fresno shall pursue installation of curbing and gutters on existing developed roadways, which are lacking drainage facilities.

County of Fresno: Revised 2000 General Plan

Goal PF-E. To provide efficient, cost-effective, and environmentally sound storm drainage and flood control facilities that protect both life and property and to divert and retain stormwater runoff for groundwater replenishment.

Policy PF-E.1. Flood Control Coordination. The County shall coordinate with the agencies responsible for flood control or storm drainage to assure that construction and acquisition of flood control and drainage facilities are adequate for future urban growth authorized by the County General Plan and city general plans.

Policy PF-E.4. Storm Drainage System Capacity. The County shall encourage the local agencies responsible for flood control or storm drainage to require that storm drainage systems be developed and expanded to meet the needs of existing and planned development.

Policy PF-E.10. Drainage Facility Design. In growth areas within the jurisdiction of a local agency responsible for flood control or storm drainage, the County shall encourage that agency to design drainage facilities as if the entire areas of *service* were developed to the pattern reflected in the adopted general plans to assure that the facilities will be adequate as the land use intensifies.

Solid Waste and Community Sanitation

2025 Fresno General Plan

E-30. Objective: Provide adequate solid waste facilities and services for the collection, transfer, recycling, and disposal of refuse.

E-30-a. Policy: Support programs and new techniques of solid waste disposal such as recycling, composting, and waste separation, to reduce the volume and toxicity of solid wastes that must be sent to landfill facilities.

E-30-b. Policy: Pursue programs to maintain conformance with AB 939, the Solid Waste Management Act of 1989, in order to comply with mandated diversion goals.

County of Fresno: Revised 2000 General Plan

Goal PF-F. To ensure the safe and efficient disposal or recycling of solid waste generated in the county in an effort to protect the public health and safety.

Policy PF-F.1. Solid Waste Source Reduction. The County shall continue to promote maximum use of solid waste source reduction, reuse, recycling, composting, and environmentally safe transformation of wastes.

Policy PF-F.5. County Integrated Waste Management Plan. The County shall ensure that all new development complies with applicable provisions of the County Integrated Waste Management Plan.

5.15.4 - Thresholds of Significance

CEQA Thresholds

In accordance with CEQA, the effects of a project are evaluated to determine if they will result in significant adverse impact on the environment. The criteria used to determine the significance of an impact to utilities and service systems are based on the Environmental Checklist in Appendix G of the State CEQA Guidelines as identified below. Accordingly, utilities and service systems impacts resulting from the proposed project are considered significant if the project would:

- a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? (See Wastewater Treatment, Impact USS-1)
- b) 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? (See Water or Wastewater Treatment Facilities, Impact USS-2)
- c) 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? (See Stormwater Drainage Facilities, Impact USS-3)
- d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? (See Water Supplies, Impact USS-4)

- e) 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? (See Wastewater Treatment Capacity, Impact USS-5)
- f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? (See Landfill Capacity, Impact USS-6)
- g) Comply with federal, state, and local statutes and regulations related to solid waste? (See Compliance with Solid Waste Regulations and Statutes, Impact USS-7)

5.15.5 - Project Impacts and Mitigation Measures

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Wastewater Treatment

Impact USS-1 The project would exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

Project Specific Impact Analysis

The potential long-term impacts related to waste discharge requirements of the existing and planned wastewater treatment facilities are categorized into two time frames and the assessment of both time frames include a full evaluation of the potential impacts that could occur with the buildout of the proposed General Plan Update. The first time frame includes the year 2025 and the potential buildout of the land uses that are included in the 2025 Fresno General Plan. The City of Fresno 2006 Wastewater Collection System Master Plan evaluated existing facilities and the need for additional facilities to accommodate the potential land uses proposed in the 2025 Fresno General Plan. After determining the potential impacts that could occur from the 2025 Fresno General Plan land uses, the second time frame includes full buildout in 2056 and the potential additional waste discharge impacts from the development of full buildout under the General Plan Update. The evaluations of the two separate time frames identify the potential waste discharge impacts that would occur from full buildout of the General Plan Update compared to existing conditions.

Existing Condition to 2025 General Plan

The City of Fresno owns and operates two wastewater treatment facilities, the Fresno-Clovis Metropolitan Regional Wastewater Reclamation Facility (Regional Facility) and the North Fresno Wastewater Reclamation Facility (North Fresno Facility). The Regional and North Fresno Facilities currently have a rated capacity of 80 million gallons per day (MGD) and 0.71 MGD, respectively (Brown and Caldwell, 2006). Both facilities discharge under Regional Water Quality Control Board Waste Discharge Order Requirements.

The Regional Water Quality Control Board has established a Waste Discharge Requirement Order (WDR) for the Regional Facility, Order No 5-01-254 established via Resolution No. R5-2002-0254-A01. The WDR for the Regional Facility establishes limits for the average dry weather flow discharge.

The current permitted average dry weather flow discharge is 94 MGD. The Regional Facility's current average dry weather flow is approximately 68 MGD (Regional Water Quality Control Board, 2002).

The WDR for the Regional Facility include requirements for pretreatment of wastewater at individual industrial customer sites. Some examples of industrial customers that would require pretreatment of wastewater include metal finishing plants, soft drink bottlers, meat packers, food processors, plastic manufacturers and industrial laundries. The WDR requires the City of Fresno to monitor area groundwater via a groundwater monitoring well network currently comprising of 22 wells located in the vicinity of the Regional Facility.

The WDR for the Regional Facility includes effluent discharge specifications that set requirements for BOD₅, total suspended solids, settleable solids, EC, pH, Chloride, Ammonia Nitrogen, Nitrate Nitrogen, Kjeldahl Nitrogen, Total Nitrogen, General Minerals, Metals and Priority Pollutants. Pond disposal specifications include requirements for dissolved oxygen, mosquito abatement and vegetation management requirements. Requirements for either daily, semi-weekly, monthly, quarterly or semi-annually discharge monitoring is required by the WDR, depending on the constituent being tested.

The Water Quality Control Plan for the Tulare Lake Basin (Bain Plan) designates beneficial uses, established water quality objectives, contains implementation plans and policies for protecting all waters of the Basin, and incorporates by reference plans and policies of the State Water Resources Control Board. The Basin Plan also contains water quality objectives for chemical constituents in and toxicity of the groundwater that address constituents in the discharge that are potentially harmful to beneficial uses. The Regional Facility must comply with the Basin Plan.

The North Facility operates under a WDR, Order No 5-2006-0090-01, and a NPDES Permit (No. CA0085189). The WDR for the North Facility establishes limits for the average dry weather flow discharge. The current permitted average dry weather flow discharge is 0.71 MGD. The North Fresno Facility's current average dry weather flow is less than 0.71 MGD.

Based on the City of Fresno 2006 Wastewater Collection System Master Plan that took into account the 2025 General Plan land uses, the Master Plan describes a build-out dry weather base flow of 150 million gallons per day (MGD). The Master Plan identified that the 150 MGD includes 14.2 MGD from the City of Clovis, which is a constant amount of treatment capacity dedicated to the City of Clovis based on current agreements (Brown and Caldwell, 2006). The remaining 135.8 MGD would be treated at the Regional Facility (110.6 MGD) and North Facility (1.2 MGD) and a portion of the total wastewater flow is planned to be treated at a future planned facility in the Southeast Development Area (24 MGD). Currently, the permitted discharge from the existing facilities is 94.71 MGD. Since, the dry weather base flow to the treatment plants is projected to be 150 MGD from development that would occur through approximately 2025, the current wastewater treatment requirements and waste discharge requirements would be exceeded and a potential significant impact would occur. This significant impact would occur due to the projected exceedance at the Regional Facility of 16.6 MGD (110.6 MGD – 94 MGD) and at the North Facility of 0.49 (1.2 MGD – 0.71 MGD). In addition, a new waste discharge permit for new wastewater treatment facilities

would be required for the additional 24 MGD of treated wastewater that is currently planned for the Southeast Development Area.

2025 General Plan to General Plan Update

The land use changes between the 2025 Fresno General Plan to the City of Fresno General Plan Update are projected to increase dry weather base flows to the treatment plants by an additional 33.6 MGD. The current wastewater treatment requirements and waste discharge requirements would be further exceeded, and a potential significant impact would occur. This significant effect is projected to occur at the Regional Facility. The wastewater treatment requirements and waste discharge requirements at the North Facility are anticipated to remain at 1.2 MGD, which is the same as under the development scenario of approximately the year 2025.

In addition to wastewater treatment requirements and waste discharge requirements associated with the wastewater treatment plant, the City is also planning to use the treated water for recycled water use and for groundwater recharge. Both of these proposed uses of treated water would require its own waste discharge permit from the Regional Water Quality Control Board.

In 2009, the State of California adopted a Recycled Water Policy establishing a mandate to increase the use of recycled water in California by 200,000 acre-feet per year. The City of Fresno Metro Plan Update includes two objectives regarding recycled water use. The City must increase the use of recycled water to help offset existing and future potable water demands and maximize the use of available recycled water exchange supply contractually available from the 1976 Fresno Irrigation District Agreement. The specific goal included in the City of Fresno Metro Plan is to provide 25,000 acre-feet per year of recycled water by 2025 for landscape irrigation and other non-potable uses to offset potable water uses (West Yost Associates, 2011).

Part of the City of Fresno 2012 Recycled Water Master Plan includes groundwater recharge project alternatives. Groundwater recharge projects provide a significant opportunity for improving the City's long-term sustainable water supply. Specific groundwater recharge projects and locations have not yet been identified. Current California Department of Public Health requirements for groundwater recharge with recycled water indicate approximately four times as much diluent water as recycled water is required for ground water recharge. Diluent water would be obtained from surface water via the Fresno Irrigation District or storm water from the Fresno Metropolitan Flood Control District. A six-month ground water travel time is required between groundwater recharge sites and the nearest drinking water well. Recycled water used for groundwater recharge must meet Title 22 requirements for tertiary recycled water, including filtration and disinfection and nitrification/denitrification treatment (Carollo, 2012).

To reduce the potential impacts associated with the wastewater discharge permits, the City will need to increase wastewater treatment capacity as well as obtain revised and new waste discharge permits. The following policies from the General Plan Update are designed to reduce the potential effect associated with wastewater treatment requirements and waste discharge requirements.

Public Utilities and Services Element

Policy PU-7-a. Treatment Capacity and Cost Recovery. Provide increased wastewater treatment plant capacity in a timely manner to facilitate planned urban development within the facility's planned service area, and accommodate experienced increase in flows and loadings from the existing community with the capital costs and benefits allocated equitably and fairly between existing users and new users while facilitating economic diversification.

As under Policy PU-5-b, new users must, to the extent not inconsistent with economic diversification strategies, pay for the cost of being attached to the treatment facility through connection fees, including the cost of any incremental burden that they may place on the entire system; and, pay for the full operational costs of extraordinary facilities such as satellite or "package" treatment plants.

Policy PU-7-b. Consider Capacity in Plan Amendments. Monitor wastewater treatment plant flows and loadings to the extent feasible and consider the wastewater treatment impacts of land use changes when evaluating general plan amendment proposals.

Policy PU-8. Promote reduction in wastewater flows and develop facilities for beneficial reuse of reclaimed water and biosolids for management and distribution of treated wastewater.

Policy PU-8-a. Reduce Wastewater. Implement conservation and other programs and policies to reduce wastewater flows.

Policy PU-8-b. Reduce Stormwater Leakage. Reduce storm water infiltration to the sewer collection system, where feasible, by elimination of storm sewer cut-ins to the sanitary sewer system.

Policy PU-8-c. Ban on Storm Drainage Connection. Prohibit new sanitary sewer cut-ins for disposal of storm runoff, except for health and safety reasons.

Policy PU-8-d. Biosolid Disposal. Investigate and implement economically effective and environmentally beneficial methods of biosolids handling and disposal.

Policy PU-8-e. Wastewater Recycling. Aggressively pursue expansion of beneficial wastewater recycling opportunities, including a timely technical, practicable and institutional evaluation of treatment, facility siting and water exchange elements.

Policy PU-8-f. Infiltration Basins. Rehabilitate existing infiltration basins and acquire additional sites for infiltration basins as needed.

Policy PU-8-g. Food and Drink Industry. Ensure adequate provision of facilities for the appropriate management of wastewater from wineries, food processing and beverage facilities, including conformance with Waste Discharge Requirements issued by the Regional Water Quality Control Board.

Policy PU-8-h. Satellite Facilities. Work with the Regional Water Quality Control Board to ensure any satellite treatment and reclamation facility proposal is consistent with governing statutes and regulations.

With the implementation of the above policies, the implementation of the General Plan Update would still result in potential significant effects associated with wastewater treatment requirements and waste discharge requirements.

Cumulative Impact Analysis

Public utility districts and other municipalities exist near or adjacent to the planning area and include the City of Clovis and Malaga Utility District. These entities have wastewater treatment facilities that could cause significant environmental impacts. However, the operation of these treatment facilities would be required to comply with the same wastewater treatment requirements and RWQCB waste discharge requirements explained above. Since the proposed project would result in potential significant impacts associated with wastewater treatment requirements and waste discharge requirements, the project's contribution to potential cumulative impacts are considerable and would be a significant cumulative impact.

Mitigation Measures

Project Specific

MM USS-1 The City shall develop and implement a wastewater master plan update.

MM USS-2 Prior to exceeding existing wastewater treatment capacity, the City shall evaluate the wastewater system and shall not approve additional development that contributes wastewater to the wastewater treatment facility that could exceed capacity until additional capacity is provided. By approximately the year 2025, the City shall construct the following improvements.

- Construct an approximately 70 MGD expansion of the Regional Wastewater Treatment Facility and obtain revised waste discharge permits as the generation of wastewater is increased.
- Construct an approximately 0.49 MGD expansion of the North Facility and obtain revised waste discharge permits as the generation of wastewater is increased.

MM USS-3 Prior to exceeding existing wastewater treatment capacity, the City shall evaluate the wastewater system and shall not approve additional development that contributes wastewater to the wastewater treatment facility that could exceed capacity until additional capacity is provided. After approximately the year 2025, the City shall construct the following improvements.

- Construct an approximately 24 MGD Wastewater Treatment Facility within the Southeast Development Area and obtain revised waste discharge permits as the generation of wastewater is increased.

- Construct an approximately 9.6 MGD expansion of the Regional Wastewater Treatment Facility and obtain revised waste discharge permits as the generation of wastewater is increased.

Cumulative

Implementation of Mitigation Measures USS-1 through USS-3 is required.

Level of Significance After Mitigation*Project Specific*

Less than significant impact.

Cumulative

Less than significant impact.

Water or Wastewater Treatment Facilities

Impact USS-2 **The project would 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.**

Project Specific Impact Analysis*Wastewater Treatment Facilities*

As discussed in Impact USS-1, the implementation of the General Plan Update will result in the need for the expansion and new wastewater treatment facilities to serve future land uses and population. In addition, according to the City of Fresno Metropolitan Water Resources Management Plan Phase 2, the expansion and new surface water treatment facilities will be needed to increase water supplies within the Planning Area. Therefore, development in accordance with the General Plan Update would result in a significant impact on the existing wastewater treatment facilities and water supplies.

The Regional Facility located southwest of the City near the intersection of Jensen and Cornelia Avenues would require an approximately 70 MGD expansion to accommodate anticipated demand by approximately the year 2025. An additional expansion of 9.6 MGD is anticipated for approximately after the year 2025. The capacity of the existing North Facility is anticipated to require expansion from 0.71 MGD to 1.2 MGD by approximately the year 2025.

The development of a new 24 MGD wastewater treatment facility is planned to be located within the Southeast Development Area to accommodate future growth.

A summary of the wastewater treatment facilities that would need to be constructed to accommodate future development associated with the General Plan Update includes the following.

- Construct 70.0 million gallon per day (MGD) expansion at the Fresno-Clovis Regional Wastewater Reclamation Facility, in accordance with the City of Fresno 2006 Wastewater Master Plan.

- Construct 25,000 acre-feet per year recycled water expansion to the Fresno-Clovis Regional Wastewater Reclamation Facility, in accordance with the January 2012 City of Fresno Metropolitan Water Resources Management Plan.
- Construct a 0.49 MGD expansion of the North Facility.
- Construct 24 MGD wastewater treatment facility within the Southeast Development Area, in accordance with the City of Fresno 2006 Wastewater Master Plan.
- Construct 9.6 million gallon per day (MGD) expansion at the Fresno-Clovis Regional Wastewater Reclamation Facility.

Surface Water Treatment Facilities

The City of Fresno owns and operates two surface water treatment facilities, the Northeast Surface Water Treatment Facility (NESWTF) and the T-3 SWTF. Based on current projections, the City anticipates the need to increase the existing capacity (30 MGD = 33,604 AF/year) of the Chestnut SWTF by an additional 30 MGD (33,604 AF/year). In addition, the City anticipates the need to construct a new 80 MGD (89,611 AF/year) SWTF near the intersection of Olive and Armstrong Avenues in the southeastern portion of the Planning Area and a possible new 20 MGD (22,403 AF/year) SWTF near the intersection of Church and Marks Avenue in the southwestern portion of the Planning Area (West Yost Associates, 2011). With the additional anticipated surface water treatment capacity of 160 MGD (179,222 AF/year), there would still need to be additional new or expanded surface water treatment or recharge facilities to accommodate the remaining 5,478 AF/year of available surface water supplies from FID and USBR which consists of 184,700 AF/year. Following is a summary of the necessary improvements.

- Construct an 80 million gallon per day (MGD) surface water treatment facility near the intersection of Armstrong and Olive Avenues, in accordance with Chapter 9 and Figure 9-1 of the City of Fresno Metropolitan Water Resources Management Plan Update Phase 2 Report, January 2012 (2012 Metro Plan Update).
- Construct a 30 MGD expansion of the existing northeast surface water treatment facility for a total capacity of 60 MGD, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 20 MGD surface water treatment facility in the southwest portion of the City, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 25,000 AF/year recycled water facility as an expansion to the Fresno-Clovis Regional Wastewater Reclamation Facility in accordance with the January 2012 City of Fresno Metropolitan Water Resources Management Plan. This improvement is required after the year 2025.

In addition to treatment facilities, the implementation of the proposed General Plan Update would result in significant impacts on existing wastewater collection system and water conveyance facilities.

Following are descriptions of the needed wastewater and water facilities to accommodate buildout in accordance with General Plan Update.

Wastewater Collection System

The existing wastewater collection system has several junction locations where flow distribution between downstream sewers can potentially be controlled. Two key junction locations include a junction structure located near the intersection of Herndon and Milburn Avenues and a junction structure located near the intersection of Dakota and Fresno Avenues, among others. The City's preliminary wastewater model did not incorporate specific decisions as to flow distribution at junction locations, but allowed uncontrolled distribution by the wastewater collection system hydraulic model. The City's modeling results indicated that a number of existing sewers would not provide sufficient capacity to accommodate General Plan Update buildout flows. Blair, Church & Flynn performed additional model analyses to evaluate the effects of various flow distribution patterns, and their effects on system capacity. The City of Fresno's preliminary wastewater model, as supplemented by the Blair, Church & Flynn analyses, also shows that several areas within the wastewater system will experience flows in excess of existing sewer capacities, at General Plan Update buildout, although to a lesser extent than for uncontrolled flow distribution conditions. There are several areas where wastewater flow rates are expected to exceed existing sewer capacity (see Figure 1.1 in Appendix J-1). Inasmuch, as the wastewater model is preliminary, it is possible that other areas within the wastewater collection system may also experience flows in excess of existing sewer capacities. Additionally, a separate wastewater analysis was performed by the City of Fresno for the downtown area as part of the Fulton Corridor Specific Plan and Community EIR Technical Report. The results of the analysis identified four potentially deficient pipe segments totaling 4,730 feet. According to the City of Fresno, the results should be considered preliminary until the sewer model input parameters are better defined. These potentially deficient pipe segments are also shown on Figure 1.1 in Appendix J-1.

The 2006 Wastewater Master Plan defines a number of capital improvement program (CIP) projects to increase system capacity to accommodate 2025 General Plan buildout flows. Some of the projects have been implemented and so are now existing sewers, while other projects have yet to be implemented. The 2006 Wastewater Master Plan Capital Improvement Projects (CIP) projects that have yet to be implemented are shown on Figure 1.2 in Appendix J-1, and the following paragraphs provide a summary of those same projects.

- Orange Avenue Trunk Sewer: This project involves a portion of the Orange Avenue Trunk Sewer, between Dakota and Jensen Avenues, Approximately 37,240 feet of new sewer main will be installed and approximately 5,760 feet of existing sewer main will be rehabilitated. The size of the new sewer main will range from 27-inches to 42-inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are RS03A, RL02, C01-REP, C02-REP, C03-REP, C04-REP, C05-REP, C06-REL and C07-REP.
- Marks Avenue Trunk Sewer: This project involves a portion of the Marks Avenue Trunk Sewer, between Clinton Avenue and Kearney Boulevard. Approximately 12,150 feet of new sewer main will be installed. The size of the new sewer main will range from 33-inches to 60-inches

in diameter. The associated project designations in the 2006 Wastewater Master Plan are CM1-REP and CM2-REP. □ North Avenue Trunk Sewer: This project involves a portion of the North Avenue Trunk Sewer, located between Polk and Fruit Avenues and also between Orange and Maple Avenues. Approximately 25,700 feet of new sewer main will be installed. The size of the new sewer main will range from 48-inches to 66-inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are CN1-REL1 and CN3-REL1.

- North Avenue Trunk Sewer: This project involves a portion of the North Avenue Trunk Sewer, located between Polk and Fruit Avenues and also between Orange and Maple Avenues. Approximately 25,700 feet of new sewer main will be installed. The size of the new sewer main will range from 48-inches to 66-inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are CN1-REL1 and CN3-REL1.
- Ashlan Avenue Trunk Sewer: This project involves a portion of the Ashlan Avenue Trunk Sewer, located between Hughes and West Avenues and also between Fruit and Blackstone Avenues. Approximately 9,260 feet of new sewer main will be installed. The size of the new sewer main will range from 24-inches to 36-inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are CA1-REL and CA2-REP.

The results of preliminary wastewater collection system modeling indicate that the remaining capacity improvement projects included in the 2006 Wastewater Master Plan CIP, as described above and shown on Figure 1.2 in Appendix J-1, can be expected to provide sufficient sewer capacity to accommodate General Plan Update buildout wastewater flows for those particular sewers.

A comparison of Figures 1.1 and 1.2 in Appendix J-1 will show that there other areas within the wastewater collection system where the General Plan Update buildout wastewater flow is expected to exceed the existing sewer capacity, and the sewer is not part of a 2006 Wastewater Master Plan CIP capacity improvement project. Thus, it is evident that additional capacity improvement projects beyond those provided for in the 2006 Wastewater Master Plan would be required in order to accommodate General Plan Update buildout wastewater flows.

The Geographic Information System (GIS) database for the City of Fresno wastewater collection system shows that approximately 28 sewer pipeline segments were installed with very flat slopes or, in some cases, with a zero slope. For these 28 segments, the preliminary wastewater collection system modeling indicates a corresponding lack of sewer capacity. However, it is believed that the modeling results for these isolated segments do not necessarily indicate the need for a capacity improvement project for General Plan Update buildout flows. Therefore, the implementation of the General Plan Update could result in significant impacts on the 28 sewer pipeline segments identified in Figures 1.1 and 1.2 in Appendix J-1.

Water Conveyance Facilities

Based on a review of the 2012 City of Fresno Metropolitan Water Resources Management Plan (Metro Plan), the existing water infrastructure facilities are not adequate to provide service to the population and land uses associated with the buildout of the 2025 General Plan. Since the proposed General Plan Update will result in approximately 425,000 more people and substantially more non-

residential land uses, as shown in Table 3-4 in the Section 3, Project Description, compared to the 2025 General Plan, the existing water infrastructure facilities will not be adequate to serve the population and land uses associated with buildout of the General Plan Update. Therefore, the development in accordance with the General Plan Update would result in a significant impact on existing water infrastructure facilities. The 2012 Metro Update identified various improvements that will be required to adequately serve a portion of the buildout of the General Plan Update within the Planning Area. These improvements include the following.

- Construct 65 new groundwater wells, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 2.0 million gallon potable water reservoir (Reservoir T2) near the intersection of Clovis and California Avenues, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 3.0 million gallon potable water reservoir (Reservoir T3) near the intersection of Temperance and Dakota Avenues, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 3.0 million gallon potable water reservoir (Reservoir T4) in the Downtown Planning Area, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 4.0 million gallon potable water reservoir (Reservoir T5) near the intersection of Ashlan and Chestnut Avenues, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 4.0 million gallon potable water reservoir (Reservoir T6) near the intersection of Ashlan Avenue and Highway 99, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct 50.3 miles of regional water transmission mains ranging in size from 24-inch to 48-inch, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct 95.9 miles of 16-inch transmission grid mains, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 4.0 million gallon potable water reservoir (SEDA Reservoir 1) within the northern part of the Southeast Development Area. This improvement is required approximately after the year 2035.
- Construct a 4.0 million gallon potable water reservoir (SEDA Reservoir 2) within the southern part of the Southeast Development Area. This improvement is required approximately after the year 2035.

In addition to the above improvements, additional facilities such as pipelines and storage facilities within Downtown area as well as other areas of the Planning Area are expected to be required to adequately serve the buildout of the General Plan Update.

Environmental Effects of Required Facilities

The construction of expanded and new wastewater treatment facilities and surface water treatment facilities, recharge facilities, wastewater collection system facilities, and water infrastructure facilities could result in short-term environmental effects. These temporary effects include traffic, air emissions, greenhouse gas emissions, and noise from construction equipment and vehicles as well as water quality effects during construction. Following is a discussion of each potential impact.

- **Traffic** - Construction of these facilities may require lane closures along the adjacent roadway and could result in lower the levels of service on nearby roadways and at intersections. These effects could be potentially significant.
- **Air Emissions** – Construction activities would result in the generation of criteria pollutants such as ROG and NOx (ozone precursors), PM₁₀, and PM_{2.5} pollutant emissions. The implementation of the proposed General Plan policies and well as existing SJVAPCD regulations identified in Section 5.3, Air Quality, would reduce potential construction emissions. However, since the timing of the construction of the expanded and new facilities is not known, there could be more than one facility under construction at one time. Therefore, there is a possibility that emission standards for the criteria pollutants identified above could be exceeded and significant impacts could occur. In addition, the operation of the treatment plants would contribute to emissions associated with the buildout of the proposed General Plan. These emissions could be criteria pollutants, toxic pollutants, and odors. These emissions could be potentially significant.
- **Greenhouse Gas Emissions** – Construction of the treatment plants would result in the generation of greenhouse gas emissions. Construction emissions would occur only in the short-term; however, since the timing of the construction of the expanded and new facilities is not known, there could be more than one facility under construction at one time. Therefore, there is a possibility that a substantial amount of greenhouse gas emissions could occur. In addition, the operation of the treatment plants could contribute to emissions associated with the buildout of the proposed General Plan. The greenhouse gas emissions were determined to be potentially significant.
- **Noise** – Construction and operation of expanded and new treatment plants would increase noise levels on and in the vicinity of each plant’s site. There are various General Plan policies that are proposed (see Section 5.11, Noise) that would reduce potential noise levels to meet City noise standards. Therefore, potential increases in noise levels associated with the future construction and operation of expanded and new treatment plants would be less than significant.
- **Water Quality** – Construction activities associated with expanded and new treatment plants could result in potential water quality issues. However, with activities that disturb more than one acre of soil, each activity must obtain coverage under the Construction General Permit and implement Best Management Practices (BMPs) to protect surface water flows from sources of pollution at the construction site. With the implementation of the proposed General Plan policies and the required BMPs, short-term construction impacts on surface

water quality would be less than significant. In addition, the operations of the treatment facilities would discharge treated water to approved locations. The approval of these locations would require consistency with the regulatory requirements identified in a waste discharge permits. Consistency with these discharge permits would result in a less than significant impact on long-term water quality.

Depending on the specific location of the expanded or new facilities, additional construction impacts that could result in long-term effects are related to aesthetics, agricultural resources, biological resources, and cultural resources. Following is a discussion of these potential impacts.

- **Aesthetics** - Based on the general locations of the expanded and new facilities, impacts related to aesthetics may be adverse; however, these effects would be less than significant because these general areas do not contain a scenic vista or scenic resources. In addition, the construction of the expanded or new facilities could alter the current visual characteristics of the area; however, the proposed General Plan includes various policies (see Section 5.1, Aesthetics) to reduce potential aesthetic impacts, and the expanded or new facilities would not substantially alter the visual characteristic of the areas. These potential facilities may add lighting systems in the area; however, the increases in lighting are anticipated to be less than significant with the implementation of the proposed General Plan policies and mitigation measures identified in Section 5.1, Aesthetics).
- **Agricultural Resources** - The general locations of the expanded and new facilities could result in impacts to current Farmland Mapping and Monitoring Program (FMMP) designated areas. Similar to the discussion in Section 5.2, the removal of FMMP lands would result in significant impacts. Therefore, the construction of expanded and new treatment facilities could result in significant farmlands impacts.
- **Biological Resources** – The future construction of expanded and new treatment facilities could result in impacts to biological resources. Proposed General Plan policies and mitigation measures identified in Section 5.4, Biological Resources would reduce potential impacts to biological resources to less than significant.
- **Cultural Resources** - The future construction of expanded and new treatment facilities could result in impacts to cultural resources. Based on a review of the potential locations for these facilities, there is a low potential for historical resources to be affected. There is a potential for unknown cultural resources (i.e., archaeological, paleontological, and human remains) to be located at the future sites of the proposed facilities. Although there is a potential for unknown resources, the implementation of the proposed General Plan policies and mitigation measures identified in Section 5.5, Cultural Resources would reduce potential impacts to cultural resources to less than significant.

Cumulative Impact Analysis

Public utility districts, water districts, and other municipalities exist near or adjacent to the Planning Area and include the City of Clovis, Pinedale Public Utility District, Pinedale County Water District, Malaga Water District, and Bakman Water Company. These entities could have construction projects

of new water or wastewater treatment facilities or other urban development that could cause similar significant environmental impacts as discussed above. Since the proposed project would result in potential significant environmental effects from the construction of expanded and new treatment facilities and sewer and water conveyance facilities, the project's contribution to cumulative environmental impacts would be considerable, and the project would result in a significant cumulative environmental impact.

As cumulative development occurs outside of the Planning Area, these developments may not result in additional demands on the existing treatment facilities and conveyance facilities. The City of Clovis is the only entity outside of the Planning Area that contributes wastewater to the Regional Facility. This contribution is currently limited to 9.3 MGD, and there is no additional capacity within the current or future expansion of the Regional Facility that is planned to be allocated to the City of Clovis. Currently, the sewer and water conveyance facilities serve areas within the Planning Area and no areas outside of the Planning Area. Cumulative development outside of the Planning Area is not expected to impact existing or future water or sewer facilities. Therefore, as identified above, the implementation of the General Plan Update would result in a significant impact on water and sewer facilities. This impact is also considered a significant cumulative impact.

Mitigation Measures

Project Specific

MM USS-4 A Traffic Control/Traffic Management Plan to address traffic impacts during construction of water and sewer facilities shall be prepared and implemented subject to approval by the City prior to construction. The plan shall identify hours of construction and for deliveries, include haul routes, identify access and parking restrictions, plan for notifications, identify pavement markings and signage, and a plan for coordination with emergency service providers and schools.

Implementation of Mitigation Measures AQ-1 through AQ-5, AES-1 through AES-5, BIO-1 through BIO-9, and CR-1 through CR-4 is required.

In addition to the above mitigation measures, the following measures are required to ensure adequate surface water treatment capacity is provided.

MM USS-5 Prior to exceeding existing water supply capacity, the City shall evaluate the water supply system and shall not approve additional development that demand additional water until additional capacity is provided. By approximately the year 2025, the following capacity improvements shall be provided.

- Construct an approximately 80 million gallon per day (MGD) surface water treatment facility near the intersection of Armstrong and Olive Avenues, in accordance with Chapter 9 and Figure 9-1 of the City of Fresno Metropolitan Water Resources Management Plan Update Phase 2 Report, January 2012 (2012 Metro Plan Update).

- Construct an approximately 30 MGD expansion of the existing northeast surface water treatment facility for a total capacity of 60 MGD, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct an approximately 20 MGD surface water treatment facility in the southwest portion of the City, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.

The following measure is to ensure that there are adequate wastewater collection system facilities for development through approximately the year 2025.

MM USS-6

Prior to exceeding capacity within the existing wastewater collection system facilities, the City shall evaluate the wastewater collection system and shall not approve additional development that would generate additional wastewater and exceed the capacity of a facility until additional capacity is provided. By approximately the year 2025, the following capacity improvements shall be provided.

- Orange Avenue Trunk Sewer: This facility shall be improved between Dakota and Jensen Avenues. Approximately 37,240 feet of new sewer main shall be installed and approximately 5,760 feet of existing sewer main shall be rehabilitated. The size of the new sewer main shall range from 27-inches to 42-inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are RS03A, RL02, C01-REP, C02-REP, C03-REP, C04-REP, C05-REP, C06-REL and C07-REP.
- Marks Avenue Trunk Sewer: This facility shall be improved between Clinton Avenue and Kearney Boulevard. Approximately 12,150 feet of new sewer main shall be installed. The size of the new sewer main shall range from 33-inches to 60-inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are CM1-REP and CM2-REP.
- North Avenue Trunk Sewer: This facility shall be improved between Polk and Fruit Avenues and also between Orange and Maple Avenues. Approximately 25,700 feet of new sewer main shall be installed. The size of the new sewer main shall range from 48-inches to 66-inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are CN1-REL1 and CN3-REL1.
- Ashlan Avenue Trunk Sewer: This facility shall be improved between Hughes and West Avenues and also between Fruit and Blackstone Avenues. Approximately 9,260 feet of new sewer main shall be installed. The size of the new sewer main shall range from 24-inches to 36-inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are CA1-REL and CA2-REP.

The following measure is to ensure that there are adequate wastewater collection system facilities through buildout of the General Plan Update.

MM USS-7 Prior to exceeding capacity within the existing 28 pipeline segment shown on Figures 1 and 2 in Appendix J-1, the City shall evaluate the wastewater collection system and shall not approve additional development that would generate additional wastewater and exceed the capacity of one of the 28 pipeline segments until additional capacity is provided.

The following measures are to ensure that there are adequate water conveyance facilities for buildout conditions of the General Plan Update.

MM USS-8 Prior to exceeding capacity within the existing water conveyance facilities, the City shall evaluate the water conveyance system and shall not approve additional development that would demand additional water and exceed the capacity of a facility until additional capacity is provided. The following capacity improvements shall be provided by approximately 2025.

- Construct 65 new groundwater wells, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 2.0 million gallon potable water reservoir (Reservoir T2) near the intersection of Clovis and California Avenues, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 3.0 million gallon potable water reservoir (Reservoir T3) near the intersection of Temperance and Dakota Avenues, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 3.0 million gallon potable water reservoir (Reservoir T4) in the Downtown Planning Area, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 4.0 million gallon potable water reservoir (Reservoir T5) near the intersection of Ashlan and Chestnut Avenues, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct a 4.0 million gallon potable water reservoir (Reservoir T6) near the intersection of Ashlan Avenue and Highway 99, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct 50.3 miles of regional water transmission mains ranging in size from 24-inch to 48-inch, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.
- Construct 95.9 miles of 16-inch transmission grid mains, in accordance with Chapter 9 and Figure 9-1 of the 2012 Metro Plan Update.

MM USS-9 Prior to exceeding capacity within the existing water conveyance facilities, the City shall evaluate the water conveyance system and shall not approve additional

development that would demand additional water and exceed the capacity of a facility until additional capacity is provided. The following capacity improvements shall be provided after approximately the year 2025 and additional water conveyance facilities shall be provided prior to exceedance of capacity within the water conveyance facilities to accommodate full buildout of the General Plan Update.

- Construct a 4.0 million gallon potable water reservoir (SEDA Reservoir 1) within the northern part of the Southeast Development Area.
- Construct a 4.0 million gallon potable water reservoir (SEDA Reservoir 2) within the southern part of the Southeast Development Area.

Additional water conveyance facilities shall be provided prior to exceedance of capacity within the water conveyance facilities to accommodate full buildout of the General Plan Update.

Cumulative

Implementation of Mitigation Measures USS-4 through USS-9, AQ-1 through AQ-5, AES-1 through AES-5, BIO-1 through BIO-9, and CR-1 through CR-4 is required.

Level of Significance After Mitigation

Project Specific

Significant impact. The potential project impacts during the construction of the required facilities could remain significant and unavoidable. The implementation of the above measures would reduce the potential impact on the capacities of the water and sewer facilities to less than significant.

Cumulative

Significant impact. The project’s contribution to potential cumulative impacts during the construction of the required facilities could remain significant and unavoidable. The implementation of the above measures would reduce the potential impact on the capacities of the water and sewer facilities to less than significant.

Stormwater Drainage Facilities

Impact USS-3 The project would 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.

Project Specific Impact Analysis

As development occurs throughout the Planning Area in accordance with the General Plan and Development Code Update, new and expanded storm water drainage facilities will be needed to adequately accommodate the increases in storm water flow due to the addition of impervious surfaces. Therefore, implementation of the General Plan Update would result in a significant impact on existing storm water drainage facilities.

Storm drainage facilities within the Planning Area as well as within Clovis are planned, implemented, operated, and maintained by the FMFCD. The existing and planned storm drainage facilities are documented in the Storm Drainage and Flood Control Master Plan (SDFCMP), which is developed and updated by FMFCD. The master plan drainage system for the Planning Area consists of 130 individual drainage areas or urban watersheds. The majority of the Planning Area is located within one of the individual drainage areas or urban watersheds. There are portions of the southeastern and western portions of the Planning Area that are not within an individual drainage area or watershed.

In 2007, the FMFCD approved the 2004 District Services Plan (Services Plan) that included flood control, local stormwater drainage, water conservation, and recreational uses within its service area. A Master EIR was prepared for the 2004 Services Plan, certified in 2007, and identified various programs including the local stormwater drainage program. This program includes facilities to accommodate future growth in accordance with land use plans approved in 2007 (i.e., the City of Fresno 2025 General Plan). These facilities include conveyance systems such as streets and gutters, storm drain inlets, storm drain pipelines, detention and retention basins, pump stations, and outfall facilities that collect and drain runoff from developed land areas. The Master EIR identified the potential environmental effects associated with the construction and operation of these future stormwater drainage facilities to adequately accommodate growth in accordance with the 2025 General Plan.

A Storm Drainage Technical Report was prepared by Blair, Church & Flynn in 2013 (see Appendix G-1), to address changes in storm water volumes within the 130 individual drainage areas of the Planning Area. The analysis included an evaluation of existing basin storage compared to the required storage to accommodate the land uses under the 2025 General Plan. The comparison found that there were 37 existing drainage areas within the Planning Area that have deficient stormwater basin storage. The analysis also included an evaluation of the changes in the future basin storage to accommodate the land uses proposed under the General Plan Update. Please note that the Storm Drainage Technical Report referred to the General Plan Update as the 2035 General Plan; however, the land uses that were evaluated were those land uses that would not be buildout until the year 2056. Under this second evaluation, there were two previous drainage areas that were found to have deficient basin storage; however, under the land use proposed under the General Plan Update, the two drainage areas would no longer have deficient storage (see Appendix G-1). The second evaluation also found one additional drainage area that would have deficient basin storage compared to the 2025 General Plan evaluation. In addition to storage basins, the development of land uses under the General Plan Update may require additional facilities beyond the facilities identified in the 2004 Services Plan. However, the type of facilities would be similar such as streets and gutters, storm drain inlets, storm drain pipelines, detention and retention basins, pump stations, and outfall facilities that collect and drain runoff from developed land areas. Therefore, the environmental analysis provided in the Final Master EIR for the 2004 District Services Plan is anticipated to adequately address the potential impacts associated with future stormwater facilities. As a result, the Master EIR that was certified for the 2004 Services Plan is hereby incorporated by reference into this Master EIR. Following is a summary of the potential significant effects that could occur with the construction and operation of the future storm water drainage facilities.

Hydrology and Water Quality

Impact USS-3.1:

- The implementation of future stormwater drainage facilities could significantly affect surface water hydrology and stream/channel geomorphology through year-round restoration of intermittent channel flows. This is Impact 4.1-4 in the 2004 District Services Plan Master EIR.

Biological Resources

Impact USS-3.2:

- Future facilities could result in the loss and/or alteration of vernal pools, seasonal wetlands and other waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers. This loss is considered a potentially significant impact. This is Impact 4.2-2 in the 2004 District Services Plan Master EIR.

Impact USS-3.3:

- Future facilities could result in the loss of special-status plant species. This is Impact 4.2-3 in the 2004 District Services Plan Master EIR.

Impact USS-3.4:

- Future facilities could result in the loss of federally listed vernal pool invertebrates crustaceans. This is Impact 4.2-4 in the 2004 District Services Plan Master EIR.

Impact USS-3.5:

- Future facilities could result in the loss of suitable habitat for the valley elderberry longhorn beetle (VELB). This is Impact 4.2-5 in the 2004 District Services Plan Master EIR.

Impact USS-3.6:

- Future facilities could result in the loss of nesting birds. This is Impact 4.2-6 in the 2004 District Services Plan Master EIR.

Impact USS-3.7:

- Future facilities could result in the loss of burrowing owl nesting habitat. This is Impact 4.2-7 in the 2004 District Services Plan Master EIR.

Impact USS-3.8:

- Future facilities could affect migratory salmonids in the San Joaquin River. This is Impact 4.2-8 in the 2004 District Services Plan Master EIR.

Impact USS-3.9:

- Future facilities would contribute to the cumulative loss and/or damage of sensitive habitats supporting native plants and wildlife species. This is Impact 4.2-10 in the 2004 District Services Plan Master EIR.

Recreation/Trails

Impact USS-3.10:

- Future facilities could result in the incompatibilities with adopted existing or planned trails and associated recreational facilities within the District service area. This is Impact 4.4-1 in the 2004 District Services Plan Master EIR.

Agricultural Resources

Impact USS-3.11:

- Future facilities could convert Prime Farmland, Farmland of Statewide Importance, and/or Unique Farmland to non-agricultural use. This is Impact 4.5-1 in the 2004 District Services Plan Master EIR.

Impact USS-3.12:

- Future facilities would contribute to the cumulative permanent loss of important farmlands. This is Impact 4.5-3 in the 2004 District Services Plan Master EIR.

Air Quality

Impact USS-3.13:

- The construction and operation of the future projects could exceed the SJVAPCD annual thresholds of significance for oxides of nitrogen (NOx). This is Impact 4.6-2 in the 2004 District Services Plan Master EIR.

Impact USS-3.14:

- Construction of the future facilities would add to the cumulative levels of ozone precursors in the SJVAB. This is Impact 4.6-6 in the 2004 District Services Plan Master EIR.

The implementation of the General Plan Update objectives and policies identified in Sections Hydrology and Water Quality (Section 5.9), Biological Resources (Section 5.4), Public Services (Section 5.13), Agricultural Resources (Section 5.2), and Air Quality (Section 5.3) would reduce the potential significant effects from the construction and operation of the future storm water drainage facilities. However, even with the implementation of these objectives and policies, the potential significant impacts identified above would remain.

The remaining environmental issues, except for greenhouse gas emissions, were addressed within the Master EIR published in 2004 as well as the as the Notice of Preparation (NOP) and Initial Study (IS/NOP) that was published in 1999 and again with the draft and final versions of the Master EIR. Each of the remaining environmental issues would result in either no impact or a less than significant impact. The implementation of future storm water drainage facilities could increase greenhouse gas emissions, primarily during construction activities. However, construction of the proposed facilities is not expected to result in a substantial increase in greenhouse gas emissions because the emissions would be temporary and would cease after construction is completed. Operation of the facilities would include infrequent vehicle trips associated with routine inspections and possibly maintenance of the basins. These operational activities would not conflict with the state's ability to meet the

Assembly Bill (AB) 32 goals for the year 2020, and therefore, would result in a less than significant impact.

Cumulative Impact Analysis

The FMFCD extends beyond the current boundaries of the spheres-of-influences for the City of Fresno and City of Clovis, but does not include the portion of the Planning Area that encompasses the southern portion of SEDA. Construction projects that are located immediately adjacent to the FMFCD boundary could cause similar significant environmental impacts as discussed above. Since the proposed project would result in potential significant environmental effects from the construction of new storm water drainage facilities, the project's contribution to cumulative environmental impacts would be considerable, and the project would result in a significant cumulative environmental impact. In addition, future cumulative development could contribute additional storm water within the Planning Area and therefore result in additional impacts to existing drainage areas. The proposed project's contribution of storm water impacts to existing drainage areas is considerable and would result in a significant cumulative impact.

Mitigation Measures

The following mitigation measures are from the Master EIR for the 2004 District Services Plan that identified specific measures to reduce potential environmental effects associated with the future construction and operation of storm water drainage facilities. The mitigation measures below are anticipated to be required for to reduce construction and operational impacts associated with drainage facilities that accommodate land uses proposed under the General Plan Update.

Project Specific

Hydrology and Water Quality

The following mitigation measure would reduce potential hydrology impacts associated with Impact USS-3.1, above.

- MM USS-10** Maintain operational intermittent flows during the dry season within define channel capacity and downstream capture capabilities for recharge.

Biological Resources

The following mitigation measures would reduce potential biological resources associated with Impact USS-3.1 through USS-3.1-9, above.

- MM USS-11** (a) The FMFCD shall conduct preliminary investigations on undeveloped lands outside of highly urbanized areas. These investigations shall examine wetland hydrology, vegetation and soil types. These preliminary investigations shall be the basis for making a determination on whether or not more in-depth wetland studies shall be necessary. If the proposed project site does not exhibit wetland hydrology, support a prevalence of wetland vegetation and wetland soil types then no further action is required.

- (b) Where proposed activities could have an impact on areas verified by the Corps as jurisdictional wetlands or waters of the U.S. (urban and rural streams, seasonal wetlands, and vernal pools), FMFCD shall obtain the necessary Clean Water Act, Section 404 permits for activities where fill material shall be placed in a wetland, obstruct the flow or circulation of waters of the United States, impair or reduce the reach of such waters (as part of the FMFCD's CDFG Memorandum of Understanding (MOU), Section 404 and 401 permits would be obtained from the U.S. Army Corps of Engineers and Regional Water Quality Control Board for any activity involving filling of jurisdictional waters). At a minimum, to meet "no net policy", the permits shall require replacement of wetland habitat at a 1:1 ratio.
- (c) Where proposed activities could have an impact on areas verified by the Corps as jurisdictional wetlands or waters of the U.S. (urban and rural streams, seasonal wetlands, and vernal pools), FMFCD shall submit and implement a wetland mitigation plan based on the wetland acreage verified by the U.S. Army Corps of Engineers. The wetland mitigation plan shall be prepared by a qualified biologist or wetland scientist experienced in wetland creation, and shall include the following or equally effective elements:
- (i) Specific location, size, and existing hydrology and soils within the wetland creation area.
- (ii) Wetland mitigation techniques, seed source, planting specifications, and required buffer setbacks. In addition, the mitigation plan shall ensure adequate water supply is provided to the created wetlands in order to maintain the proper hydrologic regimes required by the different types of wetlands created. Provisions to ensure the wetland water supply is maintained in perpetuity shall be included in the plan.
- (iii) A monitoring program for restored, enhanced, created, and preserved wetlands on the project site. A monitoring program is required to meet three objectives; 1) establish a wetland creation success criteria to be met, 2) to specify monitoring methodology, 3) to identify as far as is possible, specific remedial actions that will be required by Fresno Metropolitan Flood Control District in order to achieve the success criteria, and 4) to document the degree of success achieved in establishing wetland vegetation.
- (d) A monitoring plan shall be developed and implemented by a qualified biologist to monitor results of any on-site wetland restoration and creation for five years. The monitoring plan shall include specific success criteria, frequency and timing of monitoring, and assessment of whether or not maintenance activities are being carried out and how these shall be adjusted if necessary. If monitoring reveals that success criteria are not being met, remedial habitat creation or restoration should be designed and implemented by a qualified biologist and subject to five years of monitoring as described above.

Or

- (e) In lieu of developing a mitigation plan that outlines the avoidance, purchase, or creation of wetlands, the FMFCD could purchase mitigation credits through a Corps approved Mitigation Bank.

MM USS-12

- (a) During facility design and prior to initiation of ground disturbing activities in areas that support seasonal wetlands or vernal pools, the FMFCD shall conduct a preliminary rare plant assessment. The assessment will determine the likelihood on whether or not the project site could support rare plants. If it is determined that the project site would not support rare plants then no further action required. However, if the project site has the potential to support rare plants; then a rare plant survey shall be conducted. Rare plant surveys shall be conducted by qualified biologists in accordance with the most current CDFG/USFWS guidelines or protocols and shall be conducted at the time of year when the plants in question are identifiable.
- (b) Based on the results of the survey, prior to design approval, the FMFCD shall coordinate with CDFG and/or implement a Section 7 consultation with USFWS, shall determine whether the project facility would result in a significant impact to any special status plant species. Evaluation of project impacts shall consider the following:
- The status of the species in question (e.g., officially listed by the State or Federal Endangered Species Acts).
 - The relative density and distribution of the on-site occurrence versus typical occurrences of the species in question.
 - The habitat quality of the on-site occurrence relative to historic, current or potential distribution of the population.
- (c) Prior to design approval, the FMFCD in consultation with the CDFG and/or the USFWS, shall prepare and implement a mitigation plan, in accordance with any applicable State and/or federal statutes or laws, that reduces impacts to a less than significant level.

MM USS-13

- (a) During facility design and prior to initiation of ground disturbing activities in areas that support seasonal wetlands or vernal pools, the FMFCD shall conduct a preliminary survey to determine the presence of listed vernal pool crustaceans.
- (b) If potential habitat (vernal pools, seasonally inundated areas) or fairy shrimp exist within areas proposed to be disturbed, FMFCD shall complete the first and second phase of fairy shrimp presence or absence surveys. If an absence finding is determined and accepted by the USFWS, then no further mitigation shall be required for fairy shrimp.
- (c) If fairy shrimp are found to be present within vernal pools or other areas of inundation to be impacted by the implementation of storm drainage facilities, FMFCD shall mitigate impacts on fairy shrimp habitat in accordance with the USFWS requirements of the Programmatic Biological Opinion. This shall include

on-site or off-site creation and/or preservation of fairy shrimp habitat at ratios ranging from 3:1 to 5:1 depending on the habitat impacted and the choice of on-site or off-site mitigation. Alternatively, mitigation shall be the purchase of mitigation credit through an accredited mitigation bank.

- MM USS-14**
- (a) During facility design and prior to initiation of construction activities, the FMFCD shall conduct a project-specific survey for all potential Valley Elderberry Longhorn Beetle (VELB) habitats (elderberry shrubs), including a stem count and an assessment of historic or current VELB habitat.
 - (b) The FMFCD shall avoid and protect all potential identified VELB habitat where feasible.
 - (c) Where avoidance is infeasible, develop and implement a VELB mitigation plan in accordance with the most current USFWS mitigation guidelines for unavoidable take of VELB habitat pursuant to either Section 7 or Section 10(a) of the Federal Endangered Species Act. The mitigation plan shall include, but might not be limited to, relocation of elderberry shrubs, planting of elderberry shrubs, and monitoring of relocated and planted elderberry shrubs.

- MM USS-15**
- Prior to ground disturbing activities during nesting season (March through July) for a project that supports bird nesting habitat, the FMFCD shall conduct a survey of trees. If nests are found during the survey, a qualified biologist shall assess the nesting activity on the project site. If active nests are located, no construction activities shall be allowed within 250 feet of the nest until the young have fledged. If construction activities are planned during the non-breeding period (August through February), a nest survey is not necessary.

- MM USS-16**
- (a) FMFCD shall conduct a pre-construction breeding-season survey (approximately February 1 through August 31) of proposed project sites in suitable habitat (levee and canal berms, open grasslands with suitable burrows) during the same calendar year that construction is planned to begin.

If phased construction procedures are planned for the proposed project, the results of the above survey shall be valid only for the season when it is conducted.

- (b) During the construction stage, FMFCD shall avoid all burrowing owl nest sites potentially disturbed by project construction during the breeding season while the nest is occupied with adults and/or young. The occupied nest site shall be monitored by a qualified biologist to determine when the nest is no longer used. Avoidance shall include the establishment of a 160-foot diameter non-disturbance buffer zone around the nest site. Disturbance of any nest sites shall only occur outside of the breeding season and when the nests are unoccupied based on monitoring by a qualified biologist. The buffer zone shall be delineated by highly visible temporary construction fencing.

Based on approval by CDFG, pre-construction and pre-breeding season exclusion measures may be implemented to preclude burrowing owl occupation of the project site prior to project-related disturbance. Burrowing owls can be passively excluded from potential nest sites in the construction area, either by closing the burrows or placing one-way doors in the burrows according to current CDFG

protocol. Burrows shall be examined not more than 30 days before construction to ensure that no owls have recolonized the area of construction. For each burrow destroyed, a new burrow shall be created (by installing artificial burrows at a ratio of 2:1 on protected lands nearby.

- MM USS-17**
- (a) FMFCD shall not conduct instream activities in the San Joaquin River between October 15 and April 15. If this is not feasible, FMFCD shall consult with the National Marine Fisheries Service and CDFG on the appropriate measures to be implemented in order to protect listed salmonids in the San Joaquin River.
 - (b) Riparian vegetation on the levee shading the main channel that is removed or damaged as a result of levee raising shall be replaced at a ratio and quantity sufficient to maintain the existing shading of the channel. The location of replacement trees on or within the levees, detention ponds or channels shall be approved by the FMFCD and State Reclamation Board.

Recreation/Trails

The following measure would reduce potential impacts to existing and planned trails and associated recreational facilities as identified above in Impact USS-3.10, above.

- MM USS-18**
- (a) Prior to final design approval of all elements of the District Services Plan, the FMFCD shall consult with Fresno County, City of Fresno, and City of Clovis to determine if any element would temporarily disrupt or permanently displace adopted existing or planned trails and associated recreational facilities as a result of the proposed District Services Plan. If the proposed project would not temporarily disrupt or permanently displace adopted existing or planned trails, no further mitigation is necessary. If the proposed project would have an effect on the trails and associated facilities, the FMFCD shall implement the following.
 - (b) If short-term disruption of adopted existing or planned trails and associated recreational facilities occur, the FMFCD shall consult and coordinate with Fresno County, City of Fresno, and City of Clovis to temporarily re-route the trails and associated facilities.
 - (c) If permanent displacement of the adopted existing or planned trails and associated recreational facilities occur, the appropriate design modifications to prevent permanent displacement shall be implemented in the final project design or the FMFCD shall replace these facilities.

Agricultural Resources

No feasible measures to reduce potential farmland impacts as identified above in Impact USS-3.11 and USS-3.12 are available.

Air Quality

The following measures would reduce potential impacts to air quality associated with Impact USS-3.13 through USS-3.1-14, above.

- MM USS-19**
- (a) Minimize idling time of construction equipment vehicles to no more than ten minutes, or require that engines be shut off when not in use.
 - (b) Construction shall be curtailed as much as possible when the Air Quality Index (AQI) is above 150. AQI forecasts can be found on the SJVAPCD web site.

- (c) Off-road trucks should be equipped with on-road engines if possible.
- (d) Construction equipment should have engines that meet the current off-road engine emission standard (as certified by CARB), or be re-powered with an engine that meets this standard.

The following measure is to ensure that there is adequate storm water drainage facilities for buildout conditions of the General Plan Update.

MM USS-20 Prior to exceeding capacity within the existing storm water drainage facilities, the City shall coordinate with the Fresno Metropolitan Flood Control District to evaluate the storm water drainage system and shall not approve additional development that would convey additional storm water to a facility that would experience an exceedance of capacity until the additional capacity is provided.

Cumulative

Implementation of Mitigation Measures USS-10 through USS-20 is required.

Level of Significance After Mitigation

Project Specific

Significant impact. Significant and unavoidable impacts related to agricultural resources (Impact USS-3.11 and USS-3.12) and air quality (Impacts USS-3.13 and USS-3.14) would remain. The other remaining impacts would be reduced to less than significant.

Cumulative

Significant impact. Significant and unavoidable impacts related to agricultural resources (Impact USS-3.11 and USS-3.12) and air quality (Impacts USS-3.13 and USS-3.14) would remain. The other remaining impacts would be reduced to less than significant.

Water Supplies

Impact USS-4 **The project would not have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.**

Project Specific Impact Analysis

Based on the 2010 UWMP, projected water demand is based on a per capita target. For the years of 2020 and after, the per capita target is 250 gpcd. The projected water demand for the City of Fresno in the Year 2035, based on a population of 780,600, is 218,596 AF/year. The projected water demand for the City at full buildout of the General Plan Update, based on a population of 970,000, is 271,594 AF/year. The 2010 UWMP identifies firm water supplies for the future during normal years from the following sources and amounts as shown in Table 5.15-2.

Table 5.15-2: Water Supply Sources for Planning Area

Source	Quantity, Year 2035 and Buildout Year 2056 acre-feet per year (Normal Year) ¹
San Joaquin River (surface water)	58,200
Kings River (surface water)	126,500
Kings Sub-basin (ground water)	85,000
Total Water Supply	269,700
¹ Data obtained from the 2010 Urban Water Management Plan, 2012 Source: FirstCarbon Solutions 2014.	

The water supplies identified above (269,700 AFY) are adequate to accommodate the demand in 2035 (i.e., 218,596 AF/year), but not the demand at buildout of the General Plan Update (i.e., 271,594 AF/year). Therefore, implementation of the General Plan and Development Code Update would not have sufficient water supplies available to serve buildout of the project and would result in a significant impact related to water supplies.

To reduce potential impacts on water supply, the General Plan Update includes the following policies:

Objective PU-8. Manage and develop the City’s water facilities on a strategic timeline basis that recognizes the long-life cycle of the assets and the duration of the resources, to ensure a safe, economical, and reliable water supply for existing and planned urban development and economic diversification.

Policy PU-8-a. Forecast Need. Utilize available and innovative tools, such as computerized flow modeling to determine system capacity, as necessary to forecast demand on water production and distribution systems by urban development, and to determine appropriate facility needs.

Policy PU-8-b. Potable Water Supply and Cost Recovery. Prepare for provision of increased potable water capacity (including surface water treatment capacity) in a timely manner to facilitate planned urban development consistent with the General Plan. Accommodate increase in water demand from the existing community with the capital costs and benefits allocated equitably and fairly between existing users and new users, as authorized by law, and recognizing the differences in terms of quantity, quality and reliability of the various types of water in the City’s portfolio.

Policy PU-8-c. Conditions of Approval. Set appropriate conditions of approval for each new development proposal to ensure that the necessary potable water production and supply facilities and water resources are in place prior to occupancy.

Policy PU-8-d. CIP Update. Continue to evaluate Capital Improvement Programs and update them, as appropriate to meet the demands of both existing and planned development, including both intensification of established areas and new development within Development Areas, consistent with the General Plan.

Policy PU-8-e. Repairs. Continue to evaluate existing water production and distribution systems and plan for necessary repair or enhancement of damaged or antiquated facilities.

Policy PU-8-f. Water Quality. Continue to evaluate and implement measures determined to be appropriate and consistent with water system policies, including prioritize the use of groundwater, installation of well-head treatment facilities, construction of above-ground storage and surface water treatment facilities, and enhancing transmission grid mains to promote adequate water quality and quantity.

Policy PU-8-g. Review Project Impact on Supply. Mitigate the effects of development and capital improvement projects on the long-range water budget to ensure an adequate water supply for current and future uses.

The implementation of the above policies would reduce the potential impact on water supplies; however, the impact on water supplies will remain significant.

Cumulative Impact Analysis

The 2012 Kings Basin Integrated Regional Water Management Plan (IRWMP) was developed by the Kings Basin Water Authority, of which the City of Fresno is a member, to provide regional planning and management of water resources in the Kings Basin. The purpose of the Kings Basin IRWMP is provide a multi-agency, regional planning and management approach to maintaining a sustainable supply of the surface and groundwater resources for the water users within the basin (Kings Basin Water Authority, 2012). Other members of the Kings Basin Water Authority include: Alta Irrigation District, City of Clovis, City of Sanger, City of Dinuba, City of Reedley, City of Parlier, City of Kingsburg, City of Selma, City of Kerman, Fresno County, Tulare County, Consolidated Irrigation District, Fresno Irrigation District, Fresno Metropolitan Flood Control District, Kings County Water District, and Kings River Conservation District. The Kings Water Authority has promulgated a series of goals to maintain a sustainable water supply for the planning area. These include (Kings Basin Water Authority, 2012):

RG1: Halt, and ultimately reverse the current overdraft and provide for sustainable management of surface and groundwater

RG2: Increase the water supply reliability, enhance operations flexibility, and reduce system constraints

RG3: Improve and protect water quality

RG4: Provide additional flood protection

RG5: Protect and enhance aquatic ecosystems and wildlife habitat

To accomplish these goals, the Kings Basin Water Authority has developed Measurable Objectives, Resource Strategies, and Project and Programs. The current planning horizon of the Kings Basin IRWMP is the Year 2032.

The Kings Basin IRWMP has developed strategies to achieve the regional goal to reduce groundwater overdraft. These include (Kings Basin Water Authority, 2012):

1. Increase conjunctive use of water and groundwater storage.
2. Precipitation enhancement.
3. Increase surface storage.
4. Regional conveyance enhancement.
5. Increase recycled water use for recharge.
6. Remediation of contaminated groundwater and reinjection of the treated water.
7. Encourage the use of stormwater runoff for recharge by agencies that collect and discharge stormwater.
8. Increasing number and storage capacities of basins to store flood flows.
9. Protect recharge areas from urban development.

The Kings Basin Water Authority has developed a project review process to identify projects, rank their ability to achieve the goals of the Authority as articulated in the Kings Basin IRWMP. Participating agencies within the Kings Sub-basin vet projects with the Authority and funds are allocated to finance all or portions of projects that work to achieve the goals, including Goal RG1, reduce groundwater overdraft.

While not an instant panacea for the cumulative impacts to the availability of potable water in the Kings Basin, the coalition of water agencies that make up the Kings Water Authority and their stated goal to provide sustainable water supplies through education and providing funding for projects that work to achieve this goal through implementing the aforementioned strategies. This effort will be a long-term effort on of the Kings Basin Water Authority. Although the effort of the Kings Basin Water Authority would reduce potential impacts on water supplies, the implementation of the proposed General Plan and Development Update could contribute to impacts related to water supplies. This contribution of potential impacts is considered cumulatively considerable and a significant cumulative impact.

Mitigation Measures

Project Specific

Implementation of Mitigation Measure USS-5 is required prior to approximately the year 2025.

MM USS-21 Prior to exceeding existing water supply capacity, the City shall evaluate the water supply system and shall not approve additional development that demand additional water until additional capacity is provided. By approximately the year 2025, the City shall construct an approximately 25,000 AF/year tertiary recycled water expansion to the Fresno-Clovis Regional Wastewater Reclamation Facility in

accordance with the January 2012 City of Fresno Metropolitan Water Resources Management Plan.

Cumulative

Implementation of Mitigation Measures USS-5 and USS-21 is required.

Level of Significance After Mitigation

Project Specific

Less than significant impact.

Cumulative

Less than significant impact.

Wastewater Treatment Capacity

Impact USS-5	The project would not 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.
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Project Specific Impact Analysis

As discussed in Section 5.15-2, the City of Fresno owns and operates two wastewater treatment facilities. They are the Fresno/Clovis Regional Wastewater Reclamation Facility and the North Fresno Wastewater Reclamation Facility. The Regional Facility currently has a capacity of 80 MGD. The North Facility has a capacity of 0.71 MGD. The implementation of the proposed General Plan Update is projected to increase demand to require an expansion of the Regional Facility by 70 MGD to accommodate growth associated with the 2025 General Plan which is equivalent to the current growth projection for the year 2035 and an additional expansion of 33.6 MGD that would occur at the Regional Facility (9.6 MGD) and at the water treatment plant at the SEDA (24 MGD) by buildout of the General Plan Update. The proposed General Plan Update is projected to increase demand due to future growth associated with the year 2035. This demand would require an expansion of the North Facility by 0.49 MGD. No additional increase in capacity at the North Facility would be required to accommodate development between the year 2035 and buildout of the General Plan Update.

Therefore, the existing wastewater treatment capacity at the Regional Facility and North Facility is not adequate to serve the future development anticipated under the General Plan Update. Therefore, the proposed project would result in significant impacts to existing wastewater treatment capacity.

The General Plan Update includes the following policies designed to reduce water quality impacts that may be associated with wastewater treatment operations and discharges.

Policy PU-6-a. Treatment Capacity and Cost Recovery. Prepare for and consider the implementation of increased wastewater treatment and reclamation facility capacity in a timely

manner to facilitate planned urban development within the Metropolitan Area consistent with this General Plan. Accommodate increase in flows and loadings from the existing community with the capital costs and benefits allocated equitably and fairly between existing users and new users, as authorized by law.

Policy PU-6-b. Consider Capacity in Plan Amendments. Monitor wastewater treatment plant flows and loadings to the extent feasible. Consider the effects on wastewater treatment capacity and availability of potable water when evaluating General Plan amendment proposals, specific plans, and Quarter Section Plans.

Objective PU-7. Promote reduction in wastewater flows and develop facilities for beneficial reuse of reclaimed water and biosolids for management and distribution of treated wastewater.

Policy PU-7-a. Reduce Wastewater. Identify and consider implementing water conservation standards and other programs and policies, as determined appropriate, to reduce wastewater flows.

Policy PU-7-b. Reduce Stormwater Leakage. Reduce storm water infiltration into the sewer collection system, where feasible, through a program of replacing old and deteriorated sewer collection pipeline; eliminating existing stormwater sewer cut-ins to the sanitary sewer system; and avoiding any new sewer cut-ins except when required to protect health and safety.

Policy PU-7-c. Biosolid Disposal. Investigate and implement economically effective and environmentally beneficial methods of biosolids handling and disposal.

Policy PU-7-d. Wastewater Recycling. Pursue the development of a recycled water system and the expansion of beneficial wastewater recycling opportunities, including a timely technical, practicable, and institutional evaluation of treatment, facility siting, and water exchange elements.

Policy PU-7-e. Infiltration Basins. Continue to rehabilitate existing infiltration basins, and if determined appropriate, pursue acquiring additional sites for infiltration basins, as needed.

Policy PU-7-f. Food and Drink Industry. Ensure adequate provision of facilities for the appropriate management of wastewater from wineries, food processing and beverage facilities, including conformance with Waste Discharge Requirements issued by the Regional Water Quality Control Board.

Cumulative Impact Analysis

Public utility districts and other municipalities exist near or adjacent to the planning area and include the City of Clovis, the Pinedale Public Utility District, Pinedale County Water District, and Malaga Utility District. These entities have wastewater treatment facilities that may not be adequate to serve future populations. As a result, there could be significant impacts associated with wastewater treatment capacity. Since the existing treatment facilities are not adequate to accommodate full buildout of the proposed General Plan Update, the project's contribution to potential cumulative wastewater treatment capacity would be considerable and result in a significant cumulative impact.

Mitigation Measures

The following mitigation measures are required to reduce the impacts to be less than significant.

Project Specific

Implementation of Mitigation Measures USS-1 through USS-3 is required.

Cumulative

Implementation of Mitigation Measures USS-1 through USS-3 is required.

Level of Significance After Mitigation

Project Specific

Less than significant impact.

Cumulative

Less than significant impact.

Landfill Capacity

Impact USS-6	The project would not be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.
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Project Specific Impact Analysis

To determine the amount of solid waste that could be generated by the General Plan Update, the analysis uses information provided by the City of Fresno as well as CalRecycle. The following solid waste generation rates are used for the analysis:

- Single-Family Residential = 10 lbs./unit/day
- Multiple-Family Residential = 7 lbs./unit/day
- Commercial/Office/Public Facility = 6 lbs./1,000 sq ft /day
- Mixed Use = 6 lbs./1,000 sq ft /day
- Industrial = 6 lbs/1,000 sq ft /day

New residential, commercial, mixed use, and industrial land uses included within the boundaries of the proposed General Plan Update would increase the population by approximately 425,000 new residents. In addition, the buildout of the land uses identified in the General Plan Update includes the future development of approximately 60,626 single-family residential dwelling units, 84,538 multi-family residential dwelling units, 63.3 million square feet (msf) of commercial, 20.8 msf of mixed use, and 40.5 msf of industrial. The increase in growth and development as a result of the implementation of the General Plan Update could result in an increase of solid waste to transfer centers, landfills, and could contribute to an increased demand for solid waste services throughout the Planning Area.

Error! Reference source not found. below shows the estimated generated wastes for each land use.

Table 5.15-3: Estimated Waste Generation

Land Use	Existing Development units or msf	Buildout Development Under General Plan and Development Code Update units or msf	Incremental Increase units or msf	Solid Waste Generation Rate	Estimated Existing Solid Waste Generated	Estimated Buildout Solid Waste Generated Under General Plan and Development Code Update	Estimated Incremental Increase in Solid Waste Generated
Single-Family Residential	118,897 units	179,523 units	60,626 units	10 lbs per/unit/day ¹	1,188,970 lbs/day (595 tons/day)	1,795,230 lbs/day (898 tons/day)	606,260 lbs/day (303 tons/day)
Multiple-family Residential	67,943 units	152,481 units	84,538 units	7 lbs/unit/day ¹	475,601 lbs/day (238 tons/day)	1,067,367 lbs/day (534 tons/day)	591,766 lbs/day (296 tons/day)
Commercial/Office/Public Facility	66.4 msf	129.7msf	63.3 msf	6 lbs/1,000 sq ft/day ²	398,400 lbs/day (199 tons/day)	778,200 lbs/day (389 tons/day)	379,800 pounds/day (190 tons/day)
Mixed Use	0.1 msf	20.9msf	20.8 msf	6 lbs/1,000 sq ft/day ²	600 lbs/day (1 ton/day ⁴)	125,400 lbs/day (63 tons/day)	124,800 lbs/day (62 tons/day)
Industrial	72.8 msf	113.3 msf	40.5 msf	6 lbs/1,000 sq ft/day ³	436,800 lbs/day (218 tons/day)	679,800 lbs/day (340 tons/day)	243,000 lbs/day (122 tons/day)
Total					1,251 tons/day	2,224 tons/day	973 tons/day

Notes:
 msf – million square feet
 units – dwelling units
 lbs - pounds
 1 Source: CalRecycle, Waste Characterization, Residential Developments: Estimated Solid Waste Generation Rates, 2014.
 2 Source: CalRecycle, Waste Characterization, Commercial Sector: Estimated Solid Waste Generation Rates, 2014
 3 Source: CalRecycle, Waste Characterization, Industrial Sector: Estimated Solid Waste Generation Rates, 2014
 4 Rounded up to the nearest one.
 Source: FirstCarbon Solutions, 2014.

As shown on Table 5.15-3 above, development under the General Plan Update would result in the generation of approximately 973 additional tons of solid waste. Based on the estimated closure dates of the American Avenue Landfill in 2031, Clovis Landfill in 2047, and Coalinga Landfill in 2029, there is a potential for additional landfill capacity needed to accommodate the additional development anticipated under the General Plan Update. Therefore, development under the General Plan Update could result in a significant impact on landfill capacity.

Waste Stream Diversion

With the remaining capacity and lifespan at the landfills identified above, the increase in solid waste generated by development under the proposed General Plan Update would exceed capacity of the landfill if the estimated waste streams above occur in the future. However, AB 939 mandates the reduction of solid waste disposal in landfills, and the City is currently achieving a 71 percent diversion rate (based on 2009 data) which is anticipated to increase due to a Fresno City Council resolution that commits the City to the goal of a Zero Waste goal by 2025. This analysis assumes a worst-case scenario and does not factor in the diversion rate.

City of Fresno General Plan

The General Plan Update includes the following policies relevant to solid waste.

Public Services and Utilities

Objective PU-9: Provide adequate solid waste facilities and services for the collection, transfer, recycling, and disposal of refuse.

Policy PU-9-a. New Techniques. Continue to collaborate with affected stakeholders and partners to identify and support programs and new techniques of solid waste disposal, such as recycling, composting, waste to energy technology, and waste separation, to reduce the volume and toxicity of solid wastes that must be sent to landfill facilities.

PU-9-b. Compliance with State Law. Continue to pursue programs to maintain conformance with the Solid Waste Management Act of 1989 or as otherwise required by law and mandated diversion goals.

PU-9-c. Cleanup and Nuisance Abatement. Continue and enhance, where feasible, community sanitation programs that provide services to neighborhoods for cleanup, illegal dumping, and nuisance abatement services.

PU-9-d. Facility Siting. Locate Private or public waste facilities and recycling facilities in conformance with local land use requirements, State, and federal regulations so that transportation, processing and disposal of these materials are not detrimental to the public health, safety, welfare, and aesthetic well-being of the surrounding community.

PU-9-e. Tire Dumping. Adopt and implement as determined appropriate measures to eliminate illegal tire dumping.

The implementation of the above policies would reduce potential impacts on landfill capacity; however, as a worst-case assumption, development under the General Plan Update would still result in a significant impact on landfill capacity.

Cumulative Impact Analysis

Future development associated with buildout of the proposed General Plan Update and associated cumulative projects within Fresno County that contribute waste to landfills within the County of Fresno could impact the landfill capacity and recycling facility capacities. Since the proposed project could contribute to the impact on the capacity of the landfills within the County or other recycling facilities, the project’s contribution to the landfill and/or recycling facility capacity impact would be considerable and would be cumulatively significant.

Mitigation Measures

Project Specific

MM USS-22 Prior to exceeding landfill capacity, the City shall evaluate additional landfill locations and shall not approve additional development that could contribute solid waste to a landfill that is at capacity until additional capacity is provided.

Cumulative

Implementation of Mitigation Measure USS-22 is required.

Level of Significance After Mitigation

Project Specific

Less than significant impact.

Cumulative

Less than significant impact.

Compliance with Solid Waste Regulations and Statutes

Impact USS-7 **The project would comply with federal, state, and local statutes and regulations related to solid waste.**

Project Specific Impact Analysis

Construction and operational activities that generate solid waste are handled, transported, and disposed of in accordance with applicable Federal, State, and local regulations pertaining to municipal waste. With development in accordance with the General Plan Update, solid waste will continue to be handled, transported, and disposed of according to all applicable Federal, State, and local regulation pertaining to municipal waste disposal. As shown in Table 5.15-3, the anticipated long-term generation of solid waste from the development in accordance with the General Plan Update could increase by approximately 973 tons per day for a total of approximately 2,224 tons per day for the entire Planning Area. The City currently has a number of provisions that require or promote recycling and waste reduction. As an example, the City has the Construction and

Demolition Recycling Ordinance that requires contractors to recycle construction and demolition debris.

Implementation of the proposed project would comply with existing statutes and regulations and would result in a less than significant impact.

Cumulative Impact Analysis

All development projects would be required to comply with Federal, State, and local statutes and regulations related to solid waste. Pursuant to the California Integrated Waste Management Act of 1989 (AB 939), every city and county in the State is required to divert 50 percent of solid waste generated in its jurisdiction away from landfills. Implementation of source reduction measures, such as recycling, would serve to divert solid waste away from landfills. Cumulative development would be required to comply with existing statutes and regulations, and therefore, cumulative impacts related to solid waste would be less than significant. The proposed project's contribution to statutes and regulation compliance would be less than considerable and therefore, the project would result in a less than significant cumulative impact.

Mitigation Measures

Project Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Less than significant impact.

Cumulative

Less than significant impact.

