City Of Merced Wastewater Collection System Master Plan

DRAFT ENVIRONMENTAL IMPACT REPORT

CHAPTER 3.9 HYDROLOGY AND WATER QUALITY

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Prepared for:
City of Merced
678 W 18th Street
Merced, CA 95340

Prepared by:
Stantec Consulting Services Inc.
3875 Atherton Road
Rocklin CA 95765-3716

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Table of Contents

LIST OF FIGURES

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3.9 HYDROLOGY AND WATER QUALITY

3.9.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    - Result in substantial erosion or siltation on- or off-site;
    - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    - Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
    - Impeded or redirect flood flows.
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts. Potential impacts to hydrology and water quality that may result from implementation of the Program are described, and mitigation for significant impacts, where feasible, is identified.

3.9.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives related to hydrology and water quality that are relevant to the Program.

3.9.2.1 Federal

Federal Clean Water Act

The Federal Clean Water Act (CWA) (33 United States Code [USC] Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical,

and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). Section 401 of the CWA regulates surface water quality and a Water Quality Certification is required for federal actions (including construction activities) that may result in impacts to surface water. In California, NPDES permitting authority is delegated to and administered by the nine Regional Water Quality Control Boards (RWQCBs). The City of Merced (City) and Program Study Area are located within Region 5 regulated by the Central Valley Regional Water Quality Control Board (CVRWQCB).

NPDES Construction Permit

The CWA prohibits certain discharges of stormwater containing pollutants except in compliance with an NPDES permit. The federal statutes and regulations require discharges to surface waters comprised of stormwater associated with construction activity, including demolition, clearing, grading, and excavation, and other land disturbance activities (except operations that result in disturbance of less than 1 acre of total land area and discharges to municipalities with combined stormwater and sewer systems) to obtain coverage under an NPDES permit. The NPDES permit must require implementation of Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology to reduce or eliminate pollutants in stormwater runoff.

National Flood Insurance Act

The Federal Emergency Management Agency (FEMA) is responsible for managing the National Flood Insurance Program (NFIP), which makes federally backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage.

The NFIP, established in 1968 under the National Flood Insurance Act, requires that participating communities adopt certain minimum floodplain management standards, including restrictions on new development in designated floodways and a requirement that new structures in the 100-year flood zone be elevated to or above the 100-year flood level, known as base flood elevation. To facilitate identifying areas with flood potential, FEMA has developed Flood Insurance Rate Maps (FIRMs) that can be used for planning purposes, including floodplain management, flood insurance, and enforcement of mandatory flood insurance purchase requirements.

3.9.2.2 State

Porter-Cologne Water Quality Control Act

The State of California established the State Water Resources Control Board (SWRCB), which oversees the nine RWQCBs, through the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Through the enforcement of the Porter-Cologne Act, the SWRCB determines the beneficial uses of the waters (surface and groundwater) of the state, establishes narrative and/or numerical water quality standards, and initiates policies relating to water quality. The SWRCB and, more specifically, the RWQCB, are authorized to prescribe Waste Discharge Requirements (WDRs) for the discharge of waste, which may impact waters of the state. Furthermore, the development of water quality control plans, or Basin Plans, are required by the Porter-Cologne Act to protect water quality. The City and the Program Study Area are both within the jurisdiction of the 2018 Water Quality Control Plan for the Sacramento and San Joaquin River Basins (2018 Basin Plan). Table 2-1 of the 2018 lists six surface water bodies specific to the

Merced River with varying types of beneficial uses. While the Program Study Area is within the Merced River watershed, there are no water bodies that would be associated with Program components. As a tributary to the San Joaquin River, the Merced River and its tributaries are The SWRCB issues both General Construction Permits and Individual Permits under the auspices of the federal NPDES program.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), passed in 2014 and amended in 2015, creates a framework for sustainable, local groundwater management. The act defines sustainable groundwater management as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results," such as land subsidence and water quality degradation.

3.9.2.3 Local

Merced Vision 2030 General Plan

The City's Merced Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012) contains several policies that directly or indirectly pertain to hydrology and water quality, including the following:

Goal Area P-3: Water

- **Policy P-3.1.** Ensure that adequate water supply can be provided within the City's service area, concurrent with service expansion and population growth.

Goal Area OS-1: Open Space for the Preservation of Natural Resources

- **Policy OS-1.5.** Preserve and enhance water quality.

Goal Area OS-5: Conservation of Resources

- **Policy OS-5.1.** Promote water conservation throughout the planning area.

Goal Area S-3: Flooding

- **Policy S-3.3.** Maintain essential City services in the event of flooding or dam failure.
- **Policy S-3.4.** Locate and design essential facilities to minimize flood risk.

Merced Municipal Code

Chapter 17.48 (Flood Damage Prevention) of the City's Municipal Code includes several regulations that promote public health, safety, and general welfare of the community. Methods for reducing flood loss within this chapter include the following:

A. Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;

B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

C. Controlling the alteration of natural floodplains, stream channels, and natural protective biers, which help accommodate or channel floodwaters;

D. Controlling fill, grading, dredging, and other development which may increase flood damage; and

E. Preventing or regulating the construction of flood barriers, which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

A development permit is required for any construction that would occur within a special flood hazard zone, as identified by the Federal Insurance Administration of FEMA.

Merced Integrated Regional Water Management Plan

The Merced Integrated Regional Water Management Plan (IRWMP) program is a collaborative effort between the City and County of Merced, the Merced Irrigation District (MID), the City of Atwater, and the City of Livingston to identify water management issues, needs, objectives, and actions to meet long-term water needs within Merced County (east of the San Joaquin River). The first Merced IRWMP was completed in August 2013 and is currently being updated to comply with state guidelines released in 2016. The updated Merced IRWMP will identify programs and projects needed to address regional water needs (Merced IRWMP 2018). The objectives within the Merced IRWMP include the following:

A. Correct groundwater overdraft conditions.
B. Manage flood flows and stormwater runoff (including those caused by climate change) for public safety, water supply, recharge, and natural resource management.
C. Meet demands for all uses, including agriculture, urban, and environmental resource needs.
D. Improve coordination of land use and water resources planning.
E. Effectively address climate change adaption and/or mitigation in water resources management and infrastructure.
F. Maximize water use efficiency, including expanding in-lieu recycled water projects where feasible.
G. Protect and improve water quality for all beneficial uses, consistent with the Basin Plan.
H. Protect, restore, and improve natural resources.
I. Address water-related needs of disadvantaged communities.
J. Protect and enhance water-associated recreation opportunities.
K. Establish and maintain effective communication among water resource stakeholders in the Region.
L. Enhance public understanding of water management issues and needs.

City of Merced Urban Water Management Plan

Urban Water Management Plans (UWMPs) are required under the California Water Code (CWC) to be completed every 5 years by urban water suppliers within the state. These UWMPs are designed to maintain efficient use of urban water supplies, to continue to promote conservation programs and policies, to ensure that sufficient water supplies are available for future beneficial use, and to provide a mechanism for response during water drought

conditions. The 2015 UWMP for the City was completed in November 2017 in conjunction with other water planning efforts completed, such as the 2030 General Plan, the Merced Area Groundwater Pool Interests (MAGPI), the 2016 Water Master Plan Update, the Merced Groundwater Basin Groundwater Management Plan Update, and the Merced IRWMP (City of Merced 2017a).

Merced Groundwater Basin Groundwater Management Plan

The Groundwater Management Plan (GWMP) provides the framework to implement a groundwater management strategy for the Merced groundwater basin. The purpose of the GWMP is to identify and implement a number of actions to preserve and increase the quantity of groundwater resources within the Merced groundwater basin. MID and the City prepared the original Final Draft GWMP in 1997 to comply with the legislative requirements, and in December of 1997, water purveyors within the Merced groundwater basin signed a memorandum of understanding that created the association known as MAGPI. This GWMP was then updated on July 29, 2008, to incorporate new data and comply with update legislative requirements (MAGPI 2008). Applicable goals and elements within the GWMP include the following:

- **Goal 1** – Protect and maintain groundwater quality within the Merced Groundwater basin to satisfy current and future beneficial use.
- **Goal 3** – Protect and Maintain groundwater recharge areas within the Merced groundwater basin.
- **Element 1** – Control of Saline Water intrusion. Saline water can slowly degrade groundwater quality, limiting its range of potential use.
    - Potential source of saline intrusion in the Merced groundwater basin includes downward seepage of sewage, agricultural, or industrial waste (potential wide-spread problem associated with municipal waste water treatment plants, application of fertilizers, and dairies).

Merced Irrigation-Urban Groundwater Sustainability Agency

The Merced Irrigation-Urban Groundwater Sustainability Agency (MIUGSA) was formed in response to the Sustainable Groundwater Management Act, which required that all high and medium priority groundwater basins be managed by one or more groundwater sustainability agencies (GSAs). The GSAs have the authority to develop one or more groundwater sustainability plans (GSPs) to identify and implement solutions for the long-term sustainable management of local groundwater resources. The City and the Program Study Area are located within the boundaries of the Merced Irrigation-Urban groundwater basin, a critically over-drafted basin that is under the jurisdiction of the MIUGSA. On January 28, 2020, the MIUGSA submitted its GSP to the California Department of Water Resources; this plan details how the Merced Subbasin will become more sustainable over a 20-year timeframe (MIUGSA 2020). One of the priorities listed on page 6-7 of this GSP was “Project focuses on recharge.”

Merced Storm Drain Master Plan

In 2002 the City developed a Storm Drain Master Plan that identified infrastructure improvements necessary to accommodate stormwater runoff at build-out of the City’s Merced Vision 2015 General Plan. New development within the City is required to construct stormwater percolation/detention basins to collect runoff and filter it before it reaches the groundwater tables (City of Merced 2002).

3.9.3 Environmental Setting

3.9.3.1 Regional Setting

The Program Study Area is located within the San Joaquin River/Merced River basin or "watershed". The San Joaquin Valley basin extends over 11,000 square miles from the City of Stockton to the north, the City of Fresno in the south, the Sierra Nevada on the east, and the Coastal Ranges to the west. The San Joaquin River is the principal river within the area, and other major tributaries to the San Joaquin River include the Stanislaus, Tuolumne, and the Merced Rivers. Water flowing through the San Joaquin River drains toward the delta. The Merced Subbasin is one of the 11 distinct subbasins within the larger San Joaquin Valley Groundwater Basin.

Climate within the Program Study Area includes hot, dry summers and cool, humid winters, with average daily temperatures from 47 to 76 degrees Fahrenheit. Precipitation within the Program Study Area averages about 11 to 12 inches per year during the winter (City of Merced 2010).

3.9.3.2 Local Setting

Within the San Joaquin Valley Groundwater Basin lies the smaller Merced groundwater subbasin. The Merced subbasin includes lands south of the Merced River between the San Joaquin River to the west and the crystalline basement rock of the Sierra Nevada foothills to the east, as well as the Chowchilla River to the south. Water-bearing formations within the Merced subbasin consist of consolidated rocks and unconsolidated deposits. In particular, in the eastern portions of the Merced subbasin, consolidated rocks result in lower yields in water to wells, with the exception of the Mehrten Formation. Other consolidated rock formations with the Merced subbasin include the Ione Formation and the Valley Springs Formation. Unconsolidated deposits within the area include continental deposits, lacustrine and marsh deposits, older and younger alluvium, and floodplain deposits. The lacustrine, marsh, and floodplain deposits result in lower water yields, while the younger alluvium is more likely to yield moderate water. Additionally, there are three groundwater water bodies within the Merced subbasin, including an unconfined water body, a confined water body, and the waterbody located within the consolidated rocks.

Generally, topography within the Program Study Area is relatively flat with elevations ranging from 200 feet above mean sea level (amsl) to 150 feet amsl, with a general trend of higher elevations in the southeast and lower elevations in the southwest.

Flooding

FEMA oversees the delineation of flood zones and the provision of federal disaster assistance. FEMA manages the NFIP and publishes the FIRMs, which show the expected frequency and severity of flooding by area. Floodplains are divided into flood hazard zones designated by the potential for an area to flood. Zone X may include those areas that are located within the 100-year flood plain but are adequately protected by levee systems, while Zones A, AE, and AO are designated as areas inundated by a 100-year storm event.

Flooding within the Program Study Area is typically caused by infrequent, severe winter storms that combine with snowmelt runoff into the rivers from the Sierra Nevada foothills. Flat topography within the Program Study Area can cause stream and riverbanks to become easily overtopped by flood waters and spread over large areas. As such, more than half of the Program Study Area (which has similar limits as the City's Specific Urban Development

Plan[SUDP]/Sphere of Influence [SOI]) is located within a FEMA-designated 100-year flood plain, as shown on Figure 3.9-1 (FEMA 2008).

Additionally, as discussed in the 2030 General Plan Draft EIR, the Program Study Area has two inundation zones (Figure 3.9-2), resulting from potential failure of the Bear Reservoir Dam (east of the Program Study Area) and the Lake Yosemite Dam. The inundation zones from these two dams are shown in Figure 3.9-2 and cover a majority of the northern portion of the Program Study Area. The Department of Water Resources (DWR) is responsible for completing annual inspections of each of these dams for the purpose of safeguarding life and destruction of property. Risk of the dam failure from either of these dams is low (City of Merced 2010).

Surface Water

Local surface water sources within the Program Study Area include the Merced River, Black Rascal Creek, Bear Creek, and Fahrens Creek, in addition to numerous human-made channels that are included in MID's system of canals, levees, and ditches. Due to the increase in the area of impervious surfaces (i.e., roadways, sidewalks, and buildings), runoff and associated pollution concentrations has increased within the Program Study Area. Pollution levels are highest during November, during initial rain events, and often contain substances such as oil, battery acid, and engine coolant. Additionally, surface water quality is also affected by pesticides and fertilizers that are used in the areas surrounding the urban area of the City (within the Program Study Area). The pollutants are often washed into stream channels during storm events, thus affecting the water quality of the streams and other surface water bodies within the Program Study Area.

In regard to water supplies, according to the City UWMP, the largest use of water supplies within the City's Specific Urban Development Program/Sphere of Influence (SUDP/SOI) are from single- and multi-family residences, which collectively contribute to 71 percent of the water supply demand (City of Merced 2017a). Additionally, the demand for both potable and recycled water is continuing to increase over time. The projected demand for these water resources is estimated to rise from 22,741-acre feet (af) in 2015 to about 38,000 af by 2035 (City of Merced 2017a).

Groundwater

The Program Study Area is located within the Merced Groundwater Subbasin. Groundwater within the Program Study Area is supplied by the runoff from the Sierra Nevada foothills, where it then flows in to the 2,665 square mile Middle San Joaquin-Lower Chowchilla watershed (U.S. Geological Survey Hydrologic Unit 18040001) and the San Joaquin River groundwater basin. As discussed in the regional setting above, the San Joaquin River is the largest river within this system, which eventually drains into the delta and San Francisco Bay.

Groundwater within the Program Study Area generally tends to flow northeast to southwest; however, pumping and other human actions can cause these flows to be variable over time. Groundwater levels are saturated with fresh groundwater within the Program Study Area at a depth of about 1,200 feet, and overall quality of this groundwater tends to be moderate to good (City of Merced 2017b). However, shallower aquifers within the Program Study Area are impacted from contamination sources such as nitrates from wastewater disposal and agriculture, thus resulting in an overall decline in groundwater quality over time.

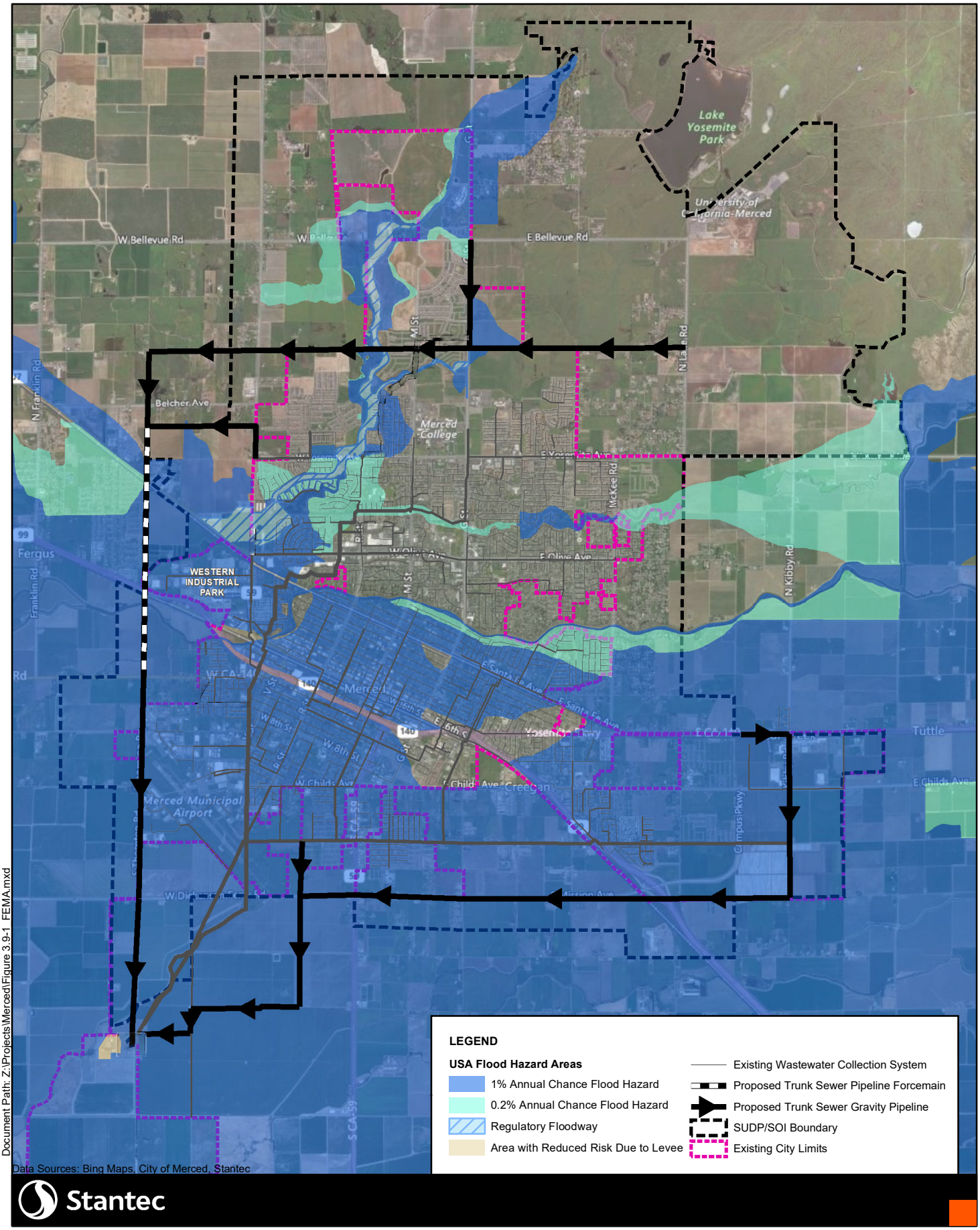
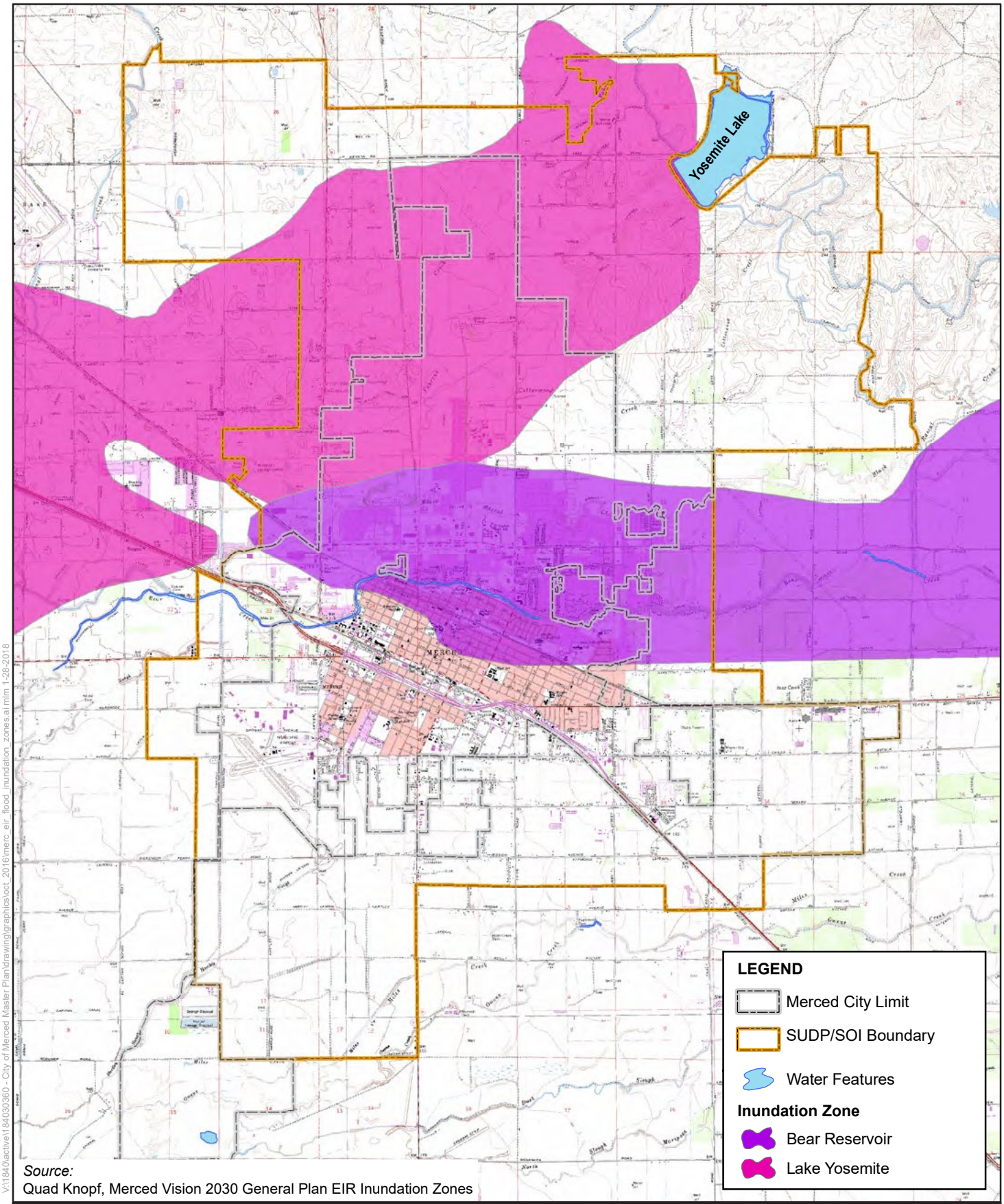


Figure 3.9-1
FEMA Flood Zones
City of Merced - Draft Environmental Impact Report



Source:
Quad Knopf, Merced Vision 2030 General Plan EIR Inundation Zones

Stantec

0 0.5 1 1.5 2
Miles

Figure 3.9-2
City of Merced Dam Failure Inundation Zones
City of Merced - Draft Environmental Impact Report

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Groundwater supplies within the Program Study Area have been closely monitored for more than 30 years and have shown a decline in water levels. From 1978 to 1985, water usage ranged from 313 to 396 gallons per day per capita. From 2005 to 2012, water usage ranged from 255 to 271 gallons per day per capita. The City has instituted water conservation measures in recent years in response to the prolonged drought and the Governor's Executive Order to reduce water consumption (City of Merced 2017b).

3.9.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to hydrology and water quality. When an impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.9.4.1 Impact Analysis

Impact HYD-1	**Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.**

Impact HYD-1 Analysis
Combined Program/Proposed Project Impacts

Construction

Construction of the Program, including project components would require site preparation, mobilization of equipment to construction sites, installation of new infrastructure, and site restoration. These construction activities have the potential to degrade surface water quality by introducing sediment to surface waters and adversely affecting both surface and groundwater quality by introducing pollutants to receiving waters throughout the Program Study Area. Construction activities could also generate hazardous wastes that if improperly managed, could enter both surface- and groundwater sources.

Construction activities, including those associated with the Program and any future Program construction, can generate loose soils that if not properly managed, can run offsite and increase sediment loads to waterways. Runoff risk is highest during the rainy season when soils can get washed away into nearby waterways. Sedimentation to the waterways degrades water quality by increasing suspended sediment, reducing the channel's flood capacity, and potentially adversely affecting associated aquatic and riparian habitats, thus resulting in a potentially significant impact prior to mitigation. As such, MM GEO-1, Prepare and Implement an Erosion Control and Stormwater Pollution Prevention Plan (SWPPP), would be implemented to ensure that disturbed soils during construction activities are properly stored and managed throughout the duration of construction activities, thus protecting water quality. The City requires that a SWPPP is prepared for all construction activities disturbing greater than 1 acre, which includes year-round best management practices (BMPs) designed to prevent impacts to water quality. MM GEO-1 would reduce water quality impacts from construction related runoff and erosion to a less than significant level.

Construction activities from the proposed Projects and any future Program construction could also generate chemical waste products such as adhesives, solvents, and petroleum lubricants, which have the potential to be accidentally released during construction. Chemicals associated with construction could adhere to soil particles and be washed into surface water sources, potentially further degrading the quality of surface water sources. As such, MM HYD-1,

Avoid/Minimize Potential Impacts from Construction Material Release, would be required to reduce potential impacts to water quality from construction materials release into waterways. MM HYD-1 includes the development and implementation of a Spill Prevention and Contingency Plan, which would effectively minimize impacts related to release of chemicals into waterways by limiting refueling distances from waterways, maintaining construction equipment, and including measures to be followed should an accidental spill occur within the Program Study Area during construction activities. Therefore, impacts to water quality resulting from construction material release would be less than significant with mitigation incorporated.

The majority of Program components, including the new pipelines, would be located within existing or future public roadway rights-of-way (ROWs), with smaller portions located within overland and undeveloped areas. Installation of the Program, including current and future Program components (i.e., pipelines) requires crossing of streams, smaller tributaries, culverts. and canals. Water crossings are anticipated to be completed using trenchless piping methods (i.e., horizontal directional drilling [HDD], jack and bore, or microtunneling) to avoid direct impacts to water features. However, in the event that trenchless methods are infeasible, traditional open trenching may be required. Impacts to the water quality associated with construction would occur from runoff and loose sediment on construction sites if it were to escape into waterways or drainages, typically during storm events or other times water runs offsite. If drainages and waterways are not avoided by installation methodologies, the rules and regulations specified in Section 3.9.2, Regulatory Framework, would need to be strictly adhered to, and all necessary permits would need to be obtained to ensure that no water quality violations occur. Federal and state permits requiring strict water quality standards, such as Section 401 of the CWA and compliance with the Porter-Cologne Act would require implementation of BMPs and potential monitoring of stream crossings, which would limit the potential impacts to waterways to less than significant levels or the Program and proposed Projects would face permit violations.

In the event that groundwater is encountered (not uncommon with deep excavations in the Central Valley during the wet season) during trenching or other construction activities, there is the potential for violations of water quality standards. MM HYD-2, Construction Dewatering Management Plan, would be implemented to ensure that water infiltrates the soil rather than results in runoff into receiving waters or storm drains. MM HYD-2 includes the preparation and implementation of a dewatering management plan to protect the existing water quality of the surrounding waterways. Additionally, if a permit, such as a RWQCB Low Threat Discharge Permit, were required, temporary onsite storage of water removed from trenches, excavations, etc. would be obtained, and water removed at drainage crossings or creeks may be temporarily stored onsite and allowed to settle prior to discharge back to the waterway, as specified in MM HYD-2. Therefore, potential impacts related to water quality from construction activities would be less than significant.

Operation

Operational impacts associated with water and groundwater quality could result from land application of biosolids and effluent discharges if not appropriately permitted, applied, and discharged and if pollutants are allowed to enter the surface- or groundwater system. As described in Section 2.3.2.3, Existing Wastewater Treatment and Reclamation Facility Projects, the City currently applies Class B solar dried biosolids to about 580 acres within the Wastewater Treatment and Reclamation Facility (WWTRF) property. The City is required to comply with Title 40 Code of Federal Regulations (CFR) Part 503 (as amended) for Class A biosolids applications as well as the CVRWQCB WDRs Order No. R5-2014-0096 and NPDES No. CA0079219 (as amended). As described in the Section 2.3.2.3, about 43,050 pounds per day (lbs/day) of solids would be produced from the 35 million gallons per day (Mgal/d) WWTRF at build-

out conditions. This would mean that about 790 acres would be required for the application of biosolids (rather than the current 580 acres for 12 Mgal/d) within the agricultural lands at the WWTRF property. Additional land application of biosolids would require an amended or new land application permit to apply additional biosolids that could result from the proposed Projects or future actions of the Program. If the City were to apply all the biosolids via land application (rather than truck biosolids away to the Synagro Central Valley Compost Facility, which is located about 22 miles from the WWTRF), the City would continue to apply and monitor these biosolids in accordance with 40 CFR Part 503 as well as in accordance with CVRWQCB Order No R5-2014-0096 and NPDES No. CA0079219. This would enforce specific application restrictions, which would ensure that chemical balance of nitrogen and phosphorus is achieved by rotation of crops and application of biosolids seasonally as dictated by the permit requirements. This would restrict timing and application sufficiently to ensure that impacts to waters, habitats, and floodways do not occur. If the City were not able to obtain a permit, biosolids would require disposal at a facility permitted to accept biosolids.

Effluent discharges to water or land also require WDR orders or a NPDES discharge permit. Similar to the requirements for biosolids, effluent discharges would require an amendment to or issuance of the City's current NPDES Permit (NPDES No. CA0079219, WDRs Order No. R5-2014-0096). This would ensure that any potential impacts to groundwater quality would remain at a less than significant level, even with the addition of further land application.

Construction and operational impacts to water quality resulting from implementation of future Program activities and the proposed Project would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HYD-1, HYD-2, and MM GEO-1

Level of Significance After Mitigation: Less than Significant

Impact HYD-1 Findings

Impact HYD-1 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HYD-1 Mitigation Required: MM HYD-1, HYD-2, and MM GEO-1

Impact HYD-1 Overall Level of Significance After Mitigation: Less than Significant

Impact HYD-2 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

Impact HYD-2 Analysis

Combined Program/Proposed Project Impacts

Construction

Program construction activities have the potential to adversely affect groundwater if excavation depth would reach the local groundwater table, and thus result in a potentially significant impact related to interreference with groundwater management prior to mitigation. If this were to occur, dewatering would be required to allow for installation of facilities or foundations. Excavations would be required for the majority of project components, including pipelines, pump stations, and improvements at the WWTRF. As such, MM HYD-2, Construction Dewatering Management Plan, would be required for any excavation activities that have the potential to encounter groundwater. The construction dewatering plan would include designation of discharge disposal sites as well as implementation of BMPs to control discharges. The contractor would also be required to obtain a dewatering permit through the CVRWQCB. Therefore, impacts associated with construction dewatering or groundwater discharges would be less than significant with mitigation incorporated.

Operation

The majority of above-ground Program components would be located in previously disturbed areas where feasible. However, some above-ground facilities may be located in previously undisturbed areas, especially for placement of some of the pipelines and pump stations, which could create impervious areas where groundwater recharge from stormwater runoff may potentially be restricted or reduced. Pump station sites would range with buildings ranging from 100 by 100 feet to 2,000 square feet with lot size requirements ranging from less than 0.25 acre to 5-acres with increases to impervious surfaces corresponding to building and portions of the lot size, creating the potential to prevent groundwater recharge if pump stations were to occur on currently pervious site (which is anticipated). Site and drainage plans of the pump station sites would include specifications on how site drainage would be collected and directed to nearby to the storm drain system, where it would eventually return flow to a nearby water source or be allowed to percolate into the groundwater table. The majority of the new pump stations, including the pump station associated with the Northern Trunk Sewer, would include site drainage that would flow into roadside drainages. Although the exact locations of future pump stations are not yet known, it is anticipated that these sites would also include roadside drainage or into the storm drain system. It is not anticipated that the addition of relatively small pump stations (i.e., with an approximate maximum size of a 2,000-square-foot structure) and associated features would substantially decrease groundwater supplies by slightly altering the course of the site's stormwater runoff. Additionally, the areas surrounding the proposed pump station associated with the Northern Trunk Sewer is largely undeveloped land used for agricultural purposes which allows groundwater recharge in the surrounding areas.

Expansions at the existing WWTRF would require the addition of permanent above-ground structures, which would result in an increase in impervious surfaces within the WWTRF boundaries. These upgrades would include new treatment facilities, buildings, and roadways for access within the 133-acre impact area (much less of which would be converted to impervious areas), which would be less than 1 percent of the overall 1,332-acre WWTRF site. Although

these upgrades and improvements would increase the amount of impervious surfaces within the WWTRF boundaries, the actual impervious footprint would be much less than the entire 133-acre of the total impact area (estimated to be about 10 to 20 acres of impervious services). Additionally, the facilities would be designed to allow for adequate drainage for stormwater and thus would continue to allow for adequate groundwater recharge in the area. Therefore, permanent above-ground features associated with the expansions of the WWTRF would result in a less than 1 percent increase of impervious surfaces and would not substantially affect groundwater supplies, groundwater table levels, or groundwater recharge, and the impact would be less than significant. Therefore, permanent WWTRF features would not substantially affect groundwater supplies, groundwater table levels, or groundwater recharge, and the direct impact would be less than significant.

There could be the potential for indirect impacts to occur if a substantial amount of surface or groundwater were removed from the Northern Merced area and redirected into a different groundwater basin. However, the Program does not involve development or management of water supplies. Water supply impacts associated with build-out of the 2030 General Plan were evaluated and considered in both the 2030 General Plan Draft EIR and the 2016 Water Master Plan Mitigated Negative Declaration and Initial Study (City of Merced 2017b) and are incorporated by reference into this Draft EIR.

The 2016 Water Master Plan Mitigated Negative Declaration and Initial Study proposes a MM calling for the WWTRF to use recycled water to mitigate for potentially significant groundwater overdraft as a result of water demands forecasted in the 2016 Water Master Plan. As described in Section 2.3.2.3, Existing Wastewater Treatment and Reclamation Facility Projects, the 2017 Wastewater Collection System Master Plan (2017 WCSMP) evaluated effluent reuse options, determining that the City needed to maintain flexibility in wastewater collection and effluent discharge, and ultimately determining that the use of recycled water at the WWTRF is not feasible. Specifically, the 2017 WCSMP determined that recycled water did not maintain the flexibility, and thus, the City evaluated other options to address groundwater overdraft, including through an agreement with MID to supplement water in North Merced, and to allow for reduced pumping, rather than using recycled water. This would help alleviate groundwater pumping impacts in the City, as addressed and further analyzed in the 2017 WCSMP. Additionally, the 2016 Water Master Plan included the MM for recycled water because the potentially significant impact was related to direct growth inducing impact from reasonable build-out of the 2030 General Plan. The Program itself, as discussed throughout this Draft EIR, is growth-accommodating rather than growth-inducing. The Program itself would not result in direct impacts related to groundwater recharge, and therefore, it is not analyzed further in this Draft EIR. Therefore, it is not anticipated that there would be an indirect substantial decrease or interference with groundwater recharge such that sustainable groundwater management would be impeded. The impact would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HYD-2

Level of Significance After Mitigation: Less than Significant

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Impact HYD-2 Findings

Impact HYD-2 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HYD-2 Mitigation Required: MM HYD-2

Impact HYD-2 Overall Level of Significance After Mitigation: Less than Significant

Impact HYD-3 **Potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would:**

- **Result in substantial erosion or siltation on- or off-site;**
- **Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;**
- **Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or**
- **Impede or redirect flood flows.**

Impact HYD-3 Analysis
Combined Program/Proposed Project Impacts

Construction

Construction activities associated with the Program, such as trenching, excavation, or earthwork, would disturb the ground surface and potentially alter drainage patterns if not stabilized properly post-construction. Trenching, excavation, and earthwork would be required for the placement of pipelines, pump stations, WWTRF expansions, and other associated appurtenances for the proposed Projects or future Program components. These activities would occur throughout the Program Study Area over the reasonable build-out, which could cause adverse effects to drainages and flood flows and result in potentially significant impacts. Creek crossing locations for the proposed Projects are shown in Figures 2.3-2, 2.3-4, and 2.3-5 in Section 2.0, Project Description; however, the crossings are not anticipated to be significantly impacted because projects associated with the Program would use trenchless technologies to avoid direct impacts with creeks while crossing them. Additionally, roadside drainages occur throughout much of the Program Study Area, which may result in impacts associated with equipment and pipe storage as pipelines are constructed.

As discussed under Impact HYD-1 above, MM GEO-1 would be required to prepare and implement an Erosion Control Plan and SWPPP, which would stabilize disturbed soils. As described above, a SWPPP is required for all construction activities that would disturb greater than 1 acre of ground surface and would include year-round BMPs to prevent erosion and sedimentation from occurring. This measure would also include stabilization of disturbed soils post-construction, which would prevent redirecting of flood flows and long-term erosion within the Program Study Area. It is anticipated that creek and culvert crossings (See Figures 2.3-2, 2.3-4, and 2.3-5 for creek crossings) for the Northern and Southern Trunk Sewer Projects would be accomplished by trenchless installation methodologies, which would minimize potential impacts to surface waters by eliminating direct work within the water course and thereby avoiding the potential impact. However, if crossing were to involve open-cut trenching, stabilization and regrading of disturbed soils required under MM HYD-1 and MM GEO-1 would minimize potential impacts by implementing the BMPs and SWPPP measures described above to contain loose sediment and construction byproducts subject to discharge. Therefore, temporary impacts related to the alteration of drainages or the addition of impervious surfaces

that would impede or redirect flood flows or otherwise contribute to runoff within the Program Study Area would be less than significant with mitigation incorporated.

Operation

Once constructed, the majority of Program components would be located underground and would not substantially add to the impervious surfaces in the area. Above-ground Program components, such as the pump station associated with the Northern Trunk Sewer or WWTRF facilities would be located on relatively small footprints (i.e., less than about 2,000 square feet for the pump stations and within the WWTRF boundary) and would be sited and designed to not substantially impede or redirect flood flows. Although the expansion of the WWTRF would result in new impervious surfaces, these impacts would occur within the existing WWTRF property line in previously disturbed areas and would not result in potentially significant impacts. Any new structures, pathways, or cement surfaces within the expanded WWTRF would be graded in such a manner to allow runoff into storm drainages or to the surrounding lands, maintaining groundwater recharge. Similarly, the new pump station associated with the Northern Trunk Sewer would be graded to allow for runoff into the local roadside drainages in the area and would not result in substantial erosion, substantially increase the rate or amount of runoff, or impede or redirect flood flows in the area. Therefore, impacts related to the alteration of drainage patterns, the addition of impervious surfaces, or creating or contributing substantially to surface runoff as a result of the WWTRF expansions and pump stations would be less than significant.

Therefore, impacts related to the alteration of drainage patterns, the addition of impervious surfaces, or creating or contributing substantially to surface runoff as a result of implementation the Program or the proposed Project would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HYD-1 and MM GEO-1

Level of Significance After Mitigation: Less than Significant

Impact HYD-3 Findings

Impact HYD-3 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HYD-3 Mitigation Required: MM HYD-1 and MM GEO-1

Impact HYD-3 Overall Level of Significance after Mitigation: Less than Significant

Impact HYD-4 In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

Impact HYD-4 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

In addition to the flood risk discussed under Impact HYD-3 above, implementation of the Program and associated above-ground components, such as the pump stations, could be at risk from flood inundation resulting from levee or dam failure. Portions of the Program Study Area boundaries are located within the inundation areas of the Bear Reservoir Dam and Lake Yosemite Dam. Both the Bear Reservoir Dam and Lake Yosemite Dam are earthen dams and are subject to greater variability in embankment materials, therefore these dams are at greater risk from breakage from ground shaking, overtopping, erosion, and other structural design flaws. Breakage of dams is very unlikely due to existing regulations for structural stability of dams, including the regular maintenance and inspection that is required for any jurisdiction that owns and operates a dam. Specifically, FEMA has developed guidelines that encourage strict safety standards of dams including safety risk management protocols, flow requirements, and earthquake design and evaluation (FEMA 2020). Although dam failures are extremely rare, a disaster such as a large earthquake or terrorist attack could still occur, thus requiring special planning and consideration if development or associated utility infrastructure were to be placed in the inundation zone of a dam.

Inundation caused by breakage or overtopping of one of these dams could cause increased pollutants in the Program Study Area if inundation flows would mix with or otherwise interact with sewage or materials present within the wastewater collection system. Pipelines would be installed underground, and construction equipment located above-ground during pipeline installation would only be present within the Program Study Area temporarily during active construction. Once the pipelines are constructed, they would operate entirely underground and would not require staffing, therefore, they would not expose people or structures to impacts associated with failure of a levee or dam. Therefore, impacts related to the of facilities within the Program Study Area that could be subject to inundation zones from levee or dam failure would be less than significant.

Pump stations would house operational equipment and materials as described in Section 2.0, Project Description, and Section 3.8, Hazards, Hazardous Materials, and Wildfires. These above-ground Program components could potentially be located within inundation zones from rupture or overtopping of the Bear River Reservoir Dam or Lake Yosemite Dam, as well as be subject to possible inundation from surrounding FEMA-identified flooding zones. These structures and associated equipment and materials could be placed within these flood hazard zones. However, these structures would be relatively small (i.e., a maximum of 2,000 square feet), designed to withstand inundation (similar to existing wastewater collection system facilities in the Program Study Area), and would be built in conformance with California Build Code standards and Chapter 17.48 (Flood Damage Prevention) of the City of Merced Municipal Code standards, which require a development permit to be obtained before any construction within an area of special flood hazard. Conformance with Chapter 17.48 of the City's Municipal Code specifically requires that all new construction of structures within a special flood hazard zone be floodproofed so that the below base flood level of the structure is watertight and with walls that are substantially impermeable to the passage of water, have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy, and be certified by a registered professional engineer or architect so that the standards of the Municipal Code are met. Additionally, materials and equipment of any future Program components would be designed to withstand inundation if within the inundation

zone and would ensure that materials are properly stored in accordance with materials safety regulations and run a low-risk of the release of pollutants. Therefore, in the unlikely event that inundation should occur in the vicinity of any proposed Project or future Program facilities, conformance to the California Building Code and City's Municipal Code standards would result in a less than significant impact from release of pollutants.

The expansion of the WWTRF would be located outside dam inundation areas, and therefore, there would be no impact related to an increased flood hazard from inundation of Bear River Dam or Lake Yosemite Dam.

Additionally, the Program Study Area is not in the vicinity of an ocean and thus, is not at risk for experiencing tsunamis, and there are no large enough lakes within the Program Study Area to produce seiches that could cause substantial damage to Program components. Therefore, there would be no impact related to tsunamis or seiches from Program-related inundation.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact HYD-4 Findings

Impact HYD-4 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact HYD-4 Mitigation Required: None Required

Impact HYD-4 Overall Level of Significance After Mitigation: Less than Significant

Impact HYD-5 Potential to conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact HYD-5 Analysis

Combined Program/Proposed Project Impacts

Construction and Operation

Applicable water quality control and sustainable groundwater management plans in the Program Study Area include the Merced IRWMP, the City's UWMP, and the Merced GWMP. Additionally, the Merced Irrigation-Urban GSP submitted to DWR in January 2020 would also apply to the Program Study Area.

A conflict would occur if the Program or the proposed Projects were to conflict with or obstruct any specific goals, policies, or objectives outlined within these plans. Section 3.9.2, Regulatory Framework, discusses the applicable goals, policies, or objectives of these respective plans, which focus on protection of the quality and quantity of water and groundwater resources. As discussed in Impact HYD-1 and Impact HYD-2, implementation of the Program would not result in significant impacts to water quality or groundwater resources with the implementation of mitigation. Impacts from construction and operation of the Program would not substantially affect surface water or groundwater resources within the Program Study Area or surrounding area. Therefore, the potential for the Program to conflict with

or obstruct implementation of water quality control plans or sustainable groundwater management plans would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

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Impact HYD-5 Findings

Impact HYD-5 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact HYD-5 Mitigation Required: None Required

Impact HYD-5 Overall Level of Significance After Mitigation: Less than Significant

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3.9.5 Hydrology and Water Quality Mitigation

Mitigation Measure GEO-1: Prepare and Implement an Erosion Control and Stormwater Pollution Prevention Plan

See Section 3.6, Geology, Soils, and Minerals.

Mitigation Measure HYD-1: Avoid/Minimize Potential Impacts from Construction Material Release

Prior to construction, the Contractor shall develop a Spill Prevention and Contingency Plan (SPCP) for the Program. The plan shall include but would not be limited to the following:

- Containment and cleanup equipment (e.g., absorbent pads, mats, socks, granules, drip pans, shovels, and lined clean drums) shall be at the staging areas and construction sites for use, as needed;
- Staging area where refueling, storage, and maintenance of equipment occur shall not be located within 100 feet of drainages to reduce the potential for contamination by spills;
- Construction equipment shall be maintained and kept in good operating condition to reduce the likelihood of line breaks or leakage;
- No refueling or servicing shall be done without absorbent material (e.g. absorbent pads, mats, socks, pillows, and granules) or drip pans underneath to contain spilled material. If these activities result in an accumulation of materials on the soil, the soil shall be removed and properly disposed of as hazardous waste;
- If trenchless methods (i.e., Horizontal Directional Drilling, jack and bore, or microtunneling) are infeasible near water features, the applicable federal, state, and local regulations would apply and all necessary permits shall be obtained for work within a waterway prior to the start of construction;
- If a spill is detected, construction activities shall immediately cease in the area, and the procedures described in the SPCP shall be immediately enacted to safely contain and remove spilled materials;

- Spill areas shall be restored to pre-spill conditions, as practicable; and
- Spills shall be documented and reported to the City within and appropriate resource agency personnel.

Mitigation Measure HYD-1 Implementation

Responsible Party: The City shall require the construction Contractor develop and implement the SPCP for all construction activities. This mitigation measure shall be referenced in the Contract Documents bid for the Program.

Timing: The SPCP shall be implemented prior to and during all phases of construction.

Monitoring and Reporting Program: Evaluation of the SPCP shall be conducted by the City, and any spills shall be documented and kept on file at City offices.

Standards for Success: Prevention of construction materials spills in all construction sites.

Mitigation Measure HYD-2: Construction Dewatering Management Plan

Water generated by dewatering activities shall be used where possible for construction activities such as compaction and dust control. This shall ensure that the water infiltrates rather than running offsite to storm drain systems or receiving waters. In order to reduce the potential for water from dewatering activities impacting the water quality of nearby waterways, the City shall require that the selected contractor develop a dewatering management plan prior to construction which shall include the following measures:

- Non-contaminated water shall be discharged to land for infiltration when:
    - The water contains sediment, but is not contaminated with other pollutants;
    - The water does not run-off from the land to storm drain systems, to creek beds (even if dry), or other surface waters;
    - Permission for infiltration is acquired from the property owner;
    - The discharge is authorized or permitted by the Central Valley Regional Water Quality Control Board (RWQCB), if applicable; and
    - If a permit, such as a RWQCB Low Threat Discharge Permit, were required, temporary onsite storage of water removed from trenches, excavations, etc. shall be obtained, and water removed at drainage crossings or creeks may be temporarily stored onsite and allowed to settle prior to discharge back to the waterway.
- The dewatering management plan shall outline a dewatering schedule and water quality monitoring process.
- The dewatering management plan shall include emergency contingency plans if unanticipated contaminants are observed in the discharge or flooding occurs resulting in cessation of water pumping.

As required by the State Water Code, all dewatering wells shall be constructed in accordance with the California Well Standards and must be permitted and inspected. After use, each dewatering well shall be properly destroyed in accordance with the California Well Standards and permitted and inspected, as required by the Merced County Environmental Health Department.

Mitigation Measure HYD-2 Implementation

Responsible Party: The City and chosen contractor

Timing: Prior to construction

Monitoring and Reporting Program: City review and approval of monitoring plan

Standards for Success: Compliance with monitoring plan, dewatering permits, and prompt and complete incident reports to the City and RWQCB.

3.9.6 Abbreviations

af	acre feet
amsl	above mean sea level
BAT	Best Available Technology Economically Achievable
BMPs	best management practices
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of Merced
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
CWC	California Water Code
DWR	Department of Water Resources
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
FIRMs	Flood Rate Insurance Maps
GSA	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plan
GWMP	Groundwater Management Plan
HDD	Horizontal Directional Drilling
IRWMP	Integrated Regional Water Management Plan
lbs/day	pounds per day
MAGPI	Merced Area Groundwater Pool Interests
Mgal/d	million gallons per day
MID	Merced Irrigation District
MIUGSA	Merced Irrigation-Urban Groundwater Sustainability Agency
MM	Mitigation Measure
NFIP	National Flood Insurance Program
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System

Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SGMA	Sustainable Groundwater Management Ac
SPCP	Spill Prevention and Contingency Plan
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USC	United States Code
UWMP	Urban Water Management Plan
WDR	Waste Discharge Requirement
WWTRF	Wastewater Treatment and Reclamation Facility
2017 WCSMP	2017 Wastewater Collection System Master Plan
2018 Basin Plan	2018 Water Quality Control Plan for the Sacramento and San Joaquin River Basins
2030 General Plan	Merced Vision 2030 General Plan

3.9.7 References

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