4.9 HYDROLOGY AND WATER QUALITY

This chapter describes the existing hydrologic conditions in the Specific Plan Area and evaluates the Project's potential individual and cumulative environmental impacts with respect to hydrology and water quality. This analysis is based on information from the following documents among others:

- Percolation Test Results Technical Letter was prepared by Engeo Incorporated on October 28, 2011 and included as Appendix I.
- Cordes Ranch Specific Plan Storm Drainage Technical Report was prepared for the City of Tracy by Storm Water Consulting, Inc. and Stantec Consulting Services, Inc. in December 2012, and included as Appendix I.
- Water Supply Assessment for the Cordes Ranch Specific Plan (WSA) was prepared for the City of Tracy by West Yost Associates and approved by the City Council in December 2012; it is included as Appendix M.

A. Regulatory Framework

There are a number of federal, State, and local laws and regulations that address hydrologic and water quality components of development. This section identifies relevant agencies, laws, and regulations as they may relate to the Project.

1. Federal Laws and Regulations

a. Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP), which provides subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains.[1] FEMA also issues Flood Insurance Rate Maps (FIRMs) that identify which land areas are subject to flooding. These maps

[1] Federal Emergency Management Agency, http://www.fema.gov/hazard/flood/index.shtm, accessed on January 11, 2013.

provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development set as the 100-year flood event. FEMA mapping of flood hazards for all of San Joaquin County, including the Specific Plan Area, was updated in 2009. The latest Flood Map data came into effect October 16, 2009.

b. Clean Water Act

The United States Environmental Protection Agency (U.S. EPA) is responsible for water quality management and administers the federal Water Pollution Control Act Amendments of 1972 and 1987, known as the Clean Water Act (CWA). The 1972 amendment established regulations for discharge of pollutants to waters of the United States from point sources. The 1987 amendment added Section 402(p), which established a framework for regulating non-point source stormwater discharges under the National Pollutant Discharge Elimination System (NPDES). The U.S. EPA is authorized to delegate implementation of these regulations to State agencies.

i. Section 303: Water Quality Objectives

Section 303 of the CWA (33 U.S.C. § 1313) requires states to adopt water quality standards for all surface waters of the United States. Water quality standards are typically numeric, although narrative criteria based upon bio-monitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Standards are based on the designated beneficial use(s) of the water body. Where multiple uses exist, water quality standards must protect the most sensitive use. In California, the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) are responsible for assuring implementation of and compliance with the provisions of the CWA.

ii. National Pollutant Discharge Elimination System

Authorized by the CWA, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of

the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. In California, the NPDES permit program is administered by the State.

The purpose of the NPDES program is to establish a comprehensive stormwater quality program to manage urban stormwater and minimize pollution of the environment to the maximum extent practicable. The NPDES program consists of: (1) characterizing receiving water quality; (2) identifying harmful constituents; (3) targeting potential sources of pollutants; and (4) implementing a Comprehensive Stormwater Management Program.

NPDES permits are issued by the U.S. EPA or by the states under U.S. EPA-approved permit programs that incorporate the CWA technological standards. Specifically, Section 402(p) of the CWA (33 U.S.C. § 1342(p)) establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program, and requires controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and systems, as well as design and engineering methods. California's Municipal Storm Water Permitting Program is implemented through the SWRCB and the RWQCBs.

iii. Phase II: Construction Impacts

Section 402 of the CWA (33 U.S.C. § 1342) mandates that certain types of construction activity comply with the requirements of the NPDES stormwater program. The Phase II Rule requires construction sites disturbing equal to or greater than one acre and less than five acres to control pollutants in storm water runoff. Construction activity that disturbs less than one acre requires a permit if it is part of a large common plan of development or sale that disturbs a total of one acre or greater. In California, permitting occurs under the General Permit for Stormwater Discharges Associated with Construction Activity, issued to the SWRCB and implemented and enforced by the nine RWQCBs. The Specific Plan Area is within the jurisdiction of the Central Valley RWQCB, as discussed further below.

2. State Laws and Regulations

a. Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) of 1969 is California's statutory authority for the protection of water quality. Under the Act, the State must adopt water quality policies, plans, and objectives that protect the State's waters for the use and enjoyment of the people. The Act sets forth the obligations of the SWRCB and the RWQCBs to adopt and periodically update water quality control plans (Basin Plans). Basin Plans are the regional water quality control plans required by both the CWA and the Porter-Cologne Act in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Specific Plan Area falls under the Basin Plan for the Sacramento and San Joaquin River Basins. The Porter-Cologne Act also requires waste dischargers to notify the relevant RWQCB of their activities through the filing of Reports of Waste Discharge (RWD) and authorizes the SWRCB and relevant RWQCB to issue and enforce waste discharge requirements (WDRs), NPDES permits, Section 401 water quality certifications, or other approvals.[2]

b. State Water Resources Control Board

In California, the SWRCB has broad authority over water quality control issues for the State. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the State by the federal government under the CWA. Other State agencies with jurisdiction over water quality issues in California include the California Department of Health Services (DHS) (for drinking water regulations), the California Department of Pesticide Regulation, the California Department of Fish and Wildlife (CDFW), and the Office of Environmental Health and Hazard Assessment.

[2] California Wetlands Information System, http://ceres.ca.gov/wetlands/permiting/porter.html, accessed on January 11, 2013.

Regional authority for planning, permitting, and enforcement is delegated to the nine RWQCBs. As described more fully below, the RWQCBs are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. The Specific Plan Area is within the jurisdiction of the Central Valley RWQCB (Region 5).

i. Construction Activities

The SWRCB has adopted a NPDES General Permit for construction activities, known as the Construction General Permit (CGP). On July 1, 2010, a new CGP (Order No. 2009-0009-DWQ) became effective, superseding a former CGP (Water Quality Order No. 99-08-DWQ). The CGP requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for each development project. The SWPPP must contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project at issue. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a Construction Site Monitoring Program (CSMP) to demonstrate that the site is in compliance with the CGP. Depending on the construction site risk level, the CSMP will include varying levels of visual monitoring and water quality sampling and analysis.

As explained more fully below, the key differences in the revised GP involves the specificity necessary for BMPs. Whereas the previous GP left the selection of BMPs to the discretion of the applicant and allowed the applicant to present them in qualitative terms, the revised GP requires that the applicant implement a SWPPP that: (1) includes specific BMPs, (2) includes a greater number of BMPs, and (3) establishes quantitative numeric effluent limitations for water quality metrics such as pH and turbidity. The specific requirements will depend on an assessment of the risk level associated with a particular site. Following is a detailed listing of the differences as they may relate to the analysis in this Draft EIR:

Rainfall Erosivity Waiver: The current CGP includes the option allowing a small construction site (> 1 and < 5 acres) to self-certify if the rainfall erosivity value (R value) for their site's given location and time frame compute to be less than or equal to 5.

Technology-Based Numeric Action Levels: The current CGP includes NALs [numeric action levels] for pH and turbidity.

Technology-Based Numeric Effluent Limitations: The current CGP contains daily average NELs [numeric effluent limitations] for pH during any construction phase where there is a high risk of pH discharge and daily average NELs turbidity for all discharges in Risk Level 3. The daily average NEL for turbidity is set at 500 NTU [turbidity] to represent the minimum technology that sites need to employ (to meet the traditional Best Available Technology Economically Achievable (BAT)/Best Conventional Pollutant Control Technology (BCT) standard) and the traditional, numeric receiving water limitations for turbidity.

Risk-Based Permitting Approach: The current CGP establishes three levels of risk possible for a construction site. Risk is calculated in two parts: (1) Project Sediment Risk, and (2) Receiving Water Risk.

Minimum Requirements Specified: The current CGP imposes more minimum BMPs and requirements than were previously only required as elements of the SWPPP or were suggested by guidance.

Project Site Soil Characteristics Monitoring and Reporting: The current CGP provides the option for dischargers to monitor and report the soil characteristics at their project location. The primary purpose of this requirement is to provide better risk determination and eventually better program evaluation.

c. *Effluent Monitoring and Reporting:*
The current CGP requires effluent monitoring and reporting for pH and turbidity in stormwater discharges. The purpose of this monitoring is to determine compliance with the NELs and evaluate whether NELs included in the current CGP are exceeded.

Receiving Water Monitoring and Reporting: The current CGP requires some Risk Level 3 dischargers to monitor receiving waters and conduct bioassessments.

Rain Event Action Plan: The current CGP requires certain sites to develop and implement a Rain Event Action Plan (REAP) that must be designed to protect all exposed portions of the site within 48 hours prior to any likely precipitation event.

Annual Reporting: The current CGP requires all projects that are enrolled for more than one continuous three-month period to submit information and annually certify that their site is in compliance with these requirements. The primary purpose of this requirement is to provide information needed for overall program evaluation and public information.

Certification/Training Requirements for Key Project Personnel: The current CGP requires that key personnel (e.g. SWPPP preparers, inspectors, etc.) have specific training or certifications to ensure their level of knowledge and skills are adequate to ensure their ability to design and evaluate project specifications that will comply with General Permit requirements.

Linear Underground/Overhead Projects: The current CGP includes requirements for all Linear Underground/Overhead Projects (LUPs).[3]

[3] SWRCB, http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml, accessed on January 11, 2013.

i. Municipal Activities

On December 8, 1999, the U.S. EPA circulated regulations requiring permits for stormwater discharges from Small Municipal Separate Storm Sewer System operators. Permits for small municipal storm sewer systems (MS4s) generally fall under the "Phase II" permits program, which regulate non-point source pollutants. In California, the NPDES Program is administered by the SWRCB. Federal regulations allow two permitting options for stormwater discharges (individual permits and general permits). The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2003-0005-DWQ) for small MS4s covered under the CWA to efficiently regulate numerous stormwater discharges under a single permit. Permittees must meet the requirements in Provision D of the General Permit that require the development and implementation of a stormwater management plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable. The City of Tracy is defined as a small MS4 under the existing General Permit.

The SWRCB has recently issued a draft Water Quality Order to replace the current General Permit for Small MS4s. In the draft Order, the City of Tracy is classified as a Renewal Traditional Small MS4 Permittee. The draft Order is much more prescriptive than the current General Permit and increases the number of program categories. The draft Order is targeted for adoption in the near future.

ii. Industrial Activities

The SWRCB has also issued a statewide General Permit (Water Quality Order No. 97-03-DWQ) for regulating stormwater discharges associated with industrial activities. This General Permit requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT). It also requires the development of a stormwater pollution prevention plan (SWPPP), a monitoring plan, and the filing of an annual report.

The SWRCB has recently issued a draft Water Quality Order to replace the current General Permit for industrial facilities. The draft Order contains several significant changes from the current General Permit, including additional certification, sampling, and inspection requirements. The draft Order is targeted for adoption in the near future.

d. TMDLs

Under CWA Section 303(d) and California's Porter-Cologne Act (discussed in subsection above), the State of California is required to establish beneficial uses of State waters and to adopt water quality standards to protect those beneficial uses. Section 303(d) of the CWA requires states to create a list of waters that are not attaining water quality standards after implementation of technology-based limits. For waters on this list, the states must develop total maximum daily loads (TMDLs) that account for all sources of the pollutants that placed the water on the list. These include "nonpoint" sources, which are sources of pollutants not connected to a specific discharger. TMDLs are established at the level necessary to implement the applicable water quality standards.

The City of Tracy's sphere of influence (SOI), including the Specific Plan Area, is part of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) adopted by the Central Valley RWQCB, which addresses surface and groundwater quality issues. In California, the SWRCB has interpreted State law to require that implementation be addressed when TMDLs become part of a region's Basin Plan. Old River that flows downstream to the north of the City's SOI is included on the Section 303(d) list of water quality limited segments requiring TMDLs to be published by the SWRCB. The listed "pollutant/stressor" is *low dissolved oxygen* and the proposed TMDL completion year for incorporation into the Basin Plan for implementation is 2019.

e. Central Valley Regional Water Quality Control Board

The Central Valley RWQCB guides and regulates water quality in streams and aquifers of the Central Valley region through designation of beneficial uses, establishment of water quality objectives, administration of the NPDES

permit program for stormwater and construction site runoff, and Section 401 (33 U.S.C. § 1341) water quality certification where development results in infill of jurisdictional wetlands or other waters of the U.S. under Section 404 of the CWA (33 U.S.C. § 1344). The Central Valley RWQCB adopted a Water Quality Control Plan for the Sacramento and San Joaquin River Basins (the Basin Plan) that designates beneficial uses, establishes water quality objectives, contains implementation actions to achieve water quality objectives, and describes surveillance and monitoring methods and programs.[4] Water quality objectives are defined as limits or levels of water quality constituents and characteristics established for the reasonable protection of beneficial uses or prevention of nuisances.

3. Local Regulations and Policies

a. City of Tracy General Plan

The Tracy General Plan contains a number of goals and policies that relate to hydrology and water quality. Goals and policies relevant to the Project are listed in Table 4.9-1. A full listing of all General Plan goals and policies is included in Appendix C.

b. Tracy Municipal Code

Chapter 9.52 of the Tracy Municipal Code is intended to minimize damage resulting from flooding and promote safety. This section of the code prohibits encroachments, including fill, new construction, substantial improvements, and other new development, in floodways, and establishes construction standards in special flood hazard areas. Chapter 11.34 of the City's Municipal Code addresses City requirements for stormwater management and discharge control, including controlling non-stormwater discharges to the stormwater conveyance system, eliminating discharges to the stormwater conveyance system from spills, dumping or disposal of materials other than stormwater,

[4] Central Valley RWQCB, 2011, *The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition, The Sacramento River Basin and San Joaquin Basin*, http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/sacsjr.pdf, accessed on December 22, 2011.

TABLE 4.9-1 GENERAL PLAN POLICIES RELEVANT TO HYDROLOGY AND WATER QUALITY

Goal/ Policy No.	Goal/Policy Content
Public Facilities Element	
Goal PF-1	Protect property from flooding.
Objective PF-1.1	*Collect, convey, store and dispose of stormwater in ways that provide an appropriate level of protection against flooding, account for future development and address applicable environmental concerns.*
Policy P1	Stormwater infrastructure shall be maintained in good condition.
Policy P2	Stormwater infrastructure shall minimize local flooding by attaining capacity that conforms to the Storm Drainage Master Plan and City Design Standards.
Policy P3	New permanent stormwater infrastructure shall be designed to serve dual purposes to the extent possible. This includes the following: ¨ Drainage facilities integrated into recreation corridors with bike paths, sidewalks, and landscaping. ¨ Drainage channels integrated with transportation and environmental corridors. ¨ Stormwater detention basins shall incorporate active and passive recreation areas where feasible. These areas shall not count towards parks dedication requirements.
Policy P4	Design of storm drainage facilities shall be consistent with State and federal requirements, including NPDES requirements.
Objective PF-2.1	*Provide effective storm drainage facilities for development projects.*
Policy P1	To the extent feasible, new development projects shall incorporate methods of reducing storm runoff within the project to reduce the requirements for downstream storm drainage infrastructure and improve stormwater quality.
Policy P2	New storm drainage facilities shall meet adopted City standards, including the standards and policies contained in the Storm Water Management Plan, the Storm Drainage Master Plan, and the Parkways Design Manual.
Policy P3	New development projects shall only be approved if necessary stormwater infrastructure is planned and is in compliance with environmental regulations.

TABLE 4.9-1 GENERAL PLAN POLICIES RELEVANT TO HYDROLOGY AND WATER QUALITY

Goal/ Policy No.	Goal/Policy Content
Policy P4	If sufficient downstream stormwater infrastructure has not yet been constructed, new development projects shall be required to implement temporary on-site retention facilities in compliance with City standards.
Goal PF-6	Adequate supplies of water for all types of users.
Objective PF-6.1	*Ensure that reliable water supply can be provided within the City's service area, even during drought conditions, while protecting the natural environment.*
Policy P3	To the extent feasible, the City shall use surface water supplies to meet daily water needs and reduce reliance on groundwater supplies.
Safety Element	
Goal SA-2	A reduction of hazards related to flooding or inundation.
Objective SA-2.1	*Minimize flood risks to development.*
Policy P1	Development shall only be allowed on lands within the 100-year flood zone, if it will not: ¨ Create danger to life and property due to increased flood heights or velocities caused by excavation, fill, roads and intended use. ¨ Create difficult emergency vehicle access in times of flood. ¨ Create a safety hazard due to the unexpected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site. ¨ Create excessive costs in providing governmental services during and after flood conditions, including maintenance and repair of public facilities. ¨ Interfere with the existing waterflow capacity of the floodway. ¨ Substantially increase erosion and/or sedimentation. ¨ Contribute to the deterioration of any watercourse or the quality of water in any body of water.
Policy P2	Public and private development in the 100-year flood zones shall have the lowest floor elevated at least 1 foot above the base flood level, or be of floor proof construction.
Policy P3	The City shall prevent the construction of flood barriers within the 100-year flood zone that divert flood water or increase flooding in other areas.

TABLE 4.9-1 GENERAL PLAN POLICIES RELEVANT TO HYDROLOGY AND WATER QUALITY

Goal/ Policy No.	Goal/Policy Content
Policy P4	Property owners within the 100-year floodplain are encouraged to purchase National Flood Insurance, which reduces the financial risk from flooding and mudflows.

Source: City of Tracy General Plan, 2011.

and reducing pollutants in urban stormwater discharges to the maximum extent practicable.

c. City of Tracy Storm Water Management Program

The CWA was amended in 1972 to prohibit the discharge of pollutants to Waters of the United States from any point source unless the discharge is in compliance with a NPDES permit. Section 402(p) was added to the CWA in 1987 to establish the framework for regulating construction, municipal, and industrial stormwater discharges under the NPDES program through a two-phase implementation plan. Phase I regulations were promulgated in 1990 and require large and medium size municipalities (population over 100,000) to comply with the NPDES municipal program. Phase II regulations were promulgated in 1999 and require small municipalities (small MS4s) obtain coverage under the NPDES municipal program. The City of Tracy is subject to the Phase II municipal program regulations and has prepared a Storm Water Management Program (SWMP) to comply with the regulations (General Permit Number CAS000004, Water Quality Order No. 2003-0005-DWQ).

The intent of the SWMP is to implement BMPs to reduce the discharge of pollutants from the City to the maximum extent practicable. The City's current SWMP, dated September 2003, includes the following six program categories:

- Public Education and Outreach
- Public Involvement and Participation

- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management in New Development and Redevelopment
- Pollution Prevention and Good Housekeeping for Municipal Operations

The SWRCB has recently issued a draft Water Quality Order to replace the current General Permit for Small MS4s. In the draft Order, the City of Tracy is classified as a Renewal Traditional Small MS4 Permittee. The draft Order is much more prescriptive than the current General Permit and increases the number of program categories. The draft Order is targeted for adoption in the near future.

d. City of Tracy Engineering Design & Construction Standards (City Standards)

In 2008, the City of Tracy adopted an updated set of standards to be applied to design and construction of projects. These standards address requirements for the design of storm drainage facilities developed throughout the City.

e. City's Manual of Stormwater Quality Control Standards for New Development and Redevelopment

The City adopted the Manual of Stormwater Quality Control Standards for New Development and Redevelopment (SWQC Manual) in 2008 in accordance to NPDES General Permit No. CAS000004. The SWQC Manual establishes standards for stormwater quality control measures, such as low impact design (LID) and BMPs, to reduce pollutants in runoff and to prevent or minimize water quality impacts. The SWQC Manual has the following goals:

- Assist new development in reducing urban runoff pollution to prevent or minimize water quality impacts.
- Provide standards for developers, design engineers, agency engineers, and planners to use in the selection, design, and implementation of General Site Design Control Measures for Low Impact Design (LID) and appropriate site-specific source and treatment control measures.

- Provide maintenance procedures to ensure that the selected control measures will be maintained to provide effective, long-term pollution control.

LID is an approach to managing stormwater runoff that mimics the natural pre-development hydrology of a development site by using design techniques that infiltrate, filter, store, treat, evaporate, and detain stormwater runoff close to the source. There are a number of opportunities in site design that can incorporate LID measures, including landscaping, open space, streetscapes, parking lots, sidewalks, and medians. LID can be used in combination with traditional storm drain systems to infiltrate the smaller, more frequent storms, while allowing the larger storms to flow to pipes and basins for flood control (possibly with lower off-site costs than traditional non-LID systems). LID techniques offer great benefits to stormwater quality, especially for the smaller return interval storm events. LID will help reduce the amount of runoff entering the City's system and will aid in recharging ground water.

Redevelopment projects with 5,000 square feet of impervious surfaces and commercial developments greater than 100,000 square feet, as well as several specific uses like automotive repair shops, are required to implement the controls identified in the SWQC Manual.

These new development and redevelopment projects must submit a Project Stormwater Quality Control Plan (SWQCP) that adequately demonstrates that the proposed project will conform to all requirements of the standards in addition to the Stormwater Pollution Prevention Plan (SWPPP) required for all construction projects. The SWQCP must be approved by the Public Works Department before building permits or use permits will be issued for the development at issue.

f. Citywide Storm Drainage Master Plan

The City of Tracy has a Master Storm Drainage Master Plan (SDMP), which adopted in September 2003, and is currently in the process of updating this

SDMP. SDMP identifies storm drainage facilities needed to serve future land development projects under the buildout condition for the City and its SOI and storm drainage facility upgrades needed to correct existing deficiencies, as well as serving as a reference document for existing storm drainage facilities and their functional characteristics.

In the Citywide Storm Drainage Master Plan, new master plan level storm drainage facilities have been identified and sized based on the following criteria:

- Detention basins: 100-year 24-hour storm.
- Detention basin pump stations (when needed): provide the desired function and attenuation during the 100-year 24-hour storm.
- Open channels, channel parkways, and greenbelt parkways: 100-year 24-hour storm.
- Underground storm drains: 100-year 24-hour storm in new development areas and in existing development areas served by 100-year 24-hour storm capacity systems. Ten-year 24-hour storm in existing development areas served by 10-year 24-hour storm capacity systems. Ten-year storm for on-site storm drains as set forth per City Standards.

B. Existing Conditions

1. Regional Hydrology and Drainage

The City of Tracy is located near the southern tip of San Joaquin County and is a part of the greater Central Valley. The most prominent regional drainage feature in the area is the San Joaquin River that drains the portion of the Central Valley south of the Sacramento-San Joaquin Delta and north of the Tulare Lake Basin. The San Joaquin River has a watershed of over 15,880 square miles and discharges to the Sacramento-San Joaquin Delta about 35

miles to the northwest of the City of Tracy.[5] Principal streams that are tributary to the San Joaquin River within the watershed include the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major lakes and reservoirs within the watershed include Camanche, Pardee, New Hogan, New Melones, Don Pedro, McClure, and Millerton.

The City of Tracy resides on transitional slopes extending between the Coastal Range to the southwest that separate the San Joaquin Valley from the San Ramon Valley and the San Joaquin Valley floor to the north. Positive drainage in the Tracy area primarily discharges to Old River to the north, and Old River joins the San Joaquin River near the Sacramento-San Joaquin Valley further north.

2. Local Hydrology and Drainage

a. Climate and Precipitation

Like much of the San Joaquin Valley, the Tracy area has two distinct weather seasons: wet and cool winters along with dry and hot summers. Average high temperatures in the coolest months in the winter are in the mid-50s, and average high temperatures in the hottest months of the summer are in the low 90s.

Precipitation records obtained from various rain gages monitored by the California Department of Water Resources and the Western Regional Climate Center in the Tracy area at elevations ranging from 61 feet to 625 feet indicate that the amount of normal annual rainfall averages less than 12 inches per year. Approximately 95 percent of this rainfall typically occurs from early fall through mid-spring (generally October through May), although infrequent summer showers do occur. Storm events during the rainy season consist of either individual storms or clusters of storms. Major

[5] Central Valley Regional Water Quality Control Board, *Surface Water Ambient Monitoring Program FY 03-04 Work Plan*, http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/workplans/0304_r5wp.pdf, accessed on January 11, 2013.

storms of greater magnitude and duration generally occur during the rainy season; however, high intensity thunderstorms (though relatively infrequent) can occur in any season.

The 100-year and 10-year 24-hour return period depths of precipitation applicable to the Tracy area are approximately 2.71 inches and 1.75 inches, respectively.[6] The Citywide Storm Drainage Master Plan for Tracy has adopted 100-year and 10-year 24-hour return period depths of precipitation of 2.69 inches and 1.85 inches, respectively, for the area containing the Specific Plan Area based on a review of available precipitation depth frequency data for nearby precipitation gage sites.

b. Topography

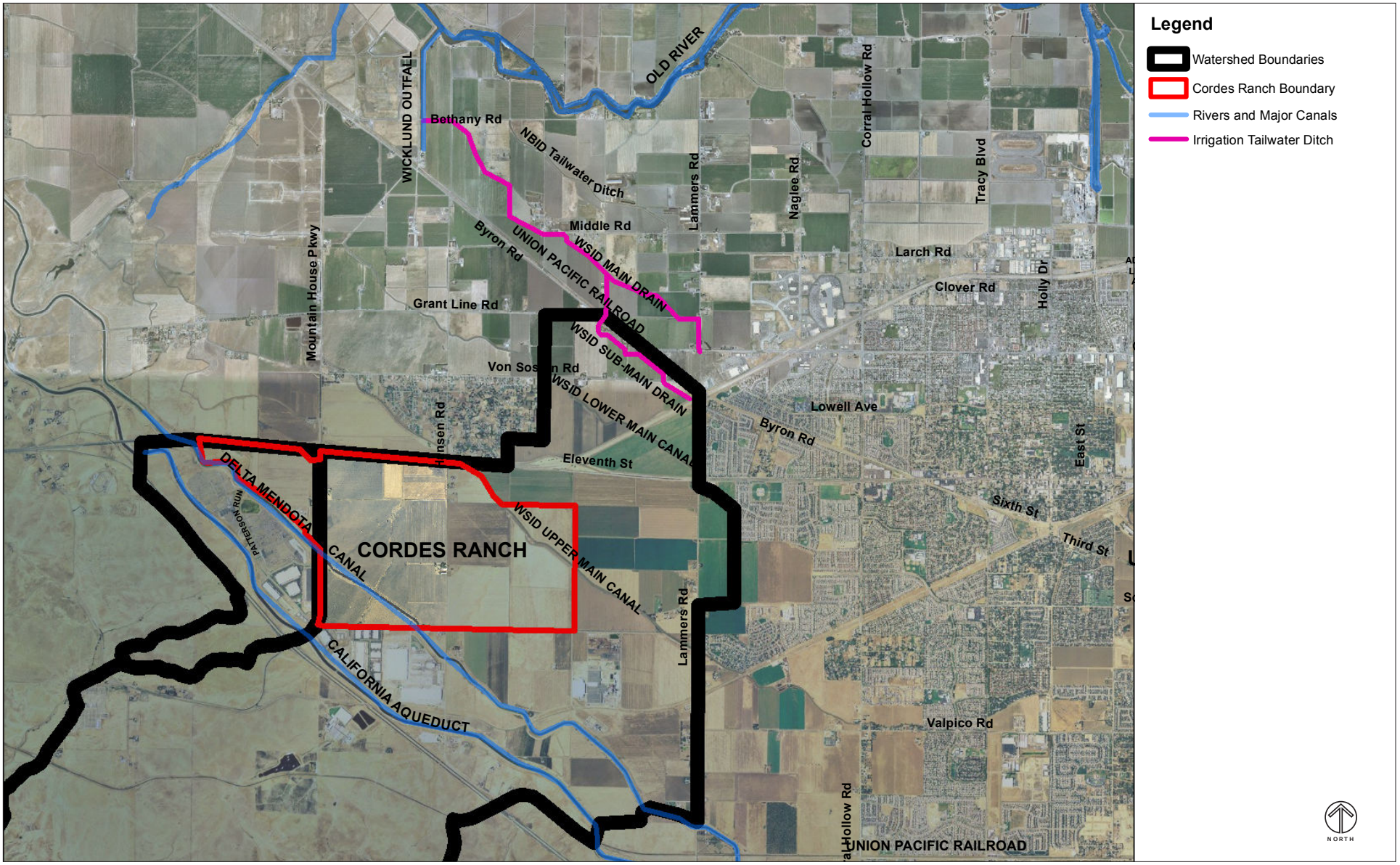
The Specific Plan Area is located within a transitional topographic zone between adjacent hillsides to the southwest and the broad valley floor of the San Joaquin Valley to the north. Generally, the Specific Plan Area slopes from southwest to northeast at an average topographic gradient ranging from 1 to 2 percent. Ground surface elevations range from about 225 feet near the southwest corner of the Specific Plan Area down to about 90 feet near the northeast corner of the Specific Plan Area. The high elevation in off-site watersheds extending upgradient into the hills to the southwest is about 2,150 feet.

c. Major Drainage Features

There are a number of major drainage features within or near the Specific Plan Area that are relevant to this Analysis. These major drainage features are described below and are shown on Figure 4.9-1:

- California Aqueduct – The California Aqueduct traverses across the drainage slopes upstream of the Specific Plan Area and perpendicular to the direction of drainage flow dictated by topography. Storm runoff is

[6] National Oceanic and Atmospheric Administration (NOAA), 2011. *NOAA Atlas 14*, Volume 6, Version 2.



Source: City of Tracy, Cordes Ranch Specific Plan Storm Drainage Technical Report, December 2012.

FIGURE 4.9-1

MAJOR DRAINAGE FEATURES

collected on the upstream side of the aqueduct and is delivered to overchutes that cross over the aqueduct or culverts that pass underneath the aqueduct. The California Aqueduct tends to consolidate runoff to fewer locations and often limits the flow rates discharged to lands below the aqueduct.

- Delta Mendota Canal – The Delta Mendota Canal runs generally parallel to and just downslope from the California Aqueduct. It passes through the southwest quadrant of the Specific Plan Area and further reduces the number of locations where storm runoff is concentrated. Storm runoff passes over or under the canal via overchutes and culverts and further limits the rates discharged to lands below the canal. The Delta Mendota Canal also contains a significant number of locations where local drainage flow that is collected on the upstream side of the canal simply enters the canal directly via drain inlets and is not released to downstream lands.

- West Side Irrigation District (WSID) Upper Main Canal – Similar to the California Aqueduct and the Delta Mendota Canal, though considerably smaller in size and capacity, the WSID Upper Main Canal extends along an alignment that is perpendicular to the direction of drainage flow dictated by topography. Local drainage flows are intercepted by the WSID Upper Main Canal and existing tailwater ponds discharge to the canal at several locations. The WSID Upper Main Canal extends through the northeast portion of the Specific Plan Area.

- Off-site Watersheds – Certain watersheds with headwaters in the hills to the southwest of the Specific Plan Area drain toward the Specific Plan Area. Flows generated within these applicable off-site watersheds enter the Specific Plan Area at locations dictated by culverts and overchutes that cross the existing aqueducts and canals. Some flow paths are well defined as they pass through the Specific Plan Area and some lose definition as they continue downstream.

- WSID Tailwater Ditches – WSID retains several tailwater ditches downstream of the Specific Plan Area that collect irrigation tailwater and urban runoff from designated portions of the City and convey it to their intake area connecting to Old River at Wicklund Road. The main

tailwater ditch is the WSID Main Drain, and a secondary ditch, the WSID Sub-Main Drain, is a significant tributary to the WSID Main Drain.

- Patterson Run – In the west portion of the Specific Plan Area, west of Mountain House Parkway, a generally well-defined drainage channel/ corridor collecting runoff generated from a large off-site watershed that extends upstream to the southwest enters the Specific Plan Area via an existing culvert underneath the Delta Mendota Canal and extends through and then exits the Specific Plan Area at an existing culvert crossing under Interstate 205. Downstream to the north of Interstate 205, Patterson Run discharges into agricultural properties and downstream storm drainage facilities operated by the Mountain House Community Services District (CSD).
- Old River – Old River is located to the north of the Specific Plan Area and is a part of the San Joaquin River system of interconnected waterways that eventually connect to the San Joaquin Delta.
- An existing natural drainage swale/channel extends from the Delta Mendota Canal toward the approximate center of the Specific Plan Area. Drainage then generally follows the swale from the southern Specific Plan Area boundary to the mid-portion of the site, terminating at a small basin. From the basin, a series of ditches convey stormwater to the east to Hansen Road, and then north along Hansen Road to a pumping station, which pumps the stormwater to the north side of Interstate 205.

d. Local Watersheds

The majority of the Specific Plan Area resides to the east of Mountain House Parkway and is located in the Lammers Watershed as defined in the Citywide Storm Drainage Master Plan. However, the westernmost portion of the Specific Plan area resides to the west of Mountain House Parkway and is located in the Mountain House Watershed as defined in the Citywide Storm Drainage Master Plan. These watersheds were delineated based on topography, physical features, land use, and existing and proposed locations of future discharge of stormwater. Both watersheds also receive storm runoff

contributions originating from off-site watersheds extending upstream into the hills to the southwest.

i. Lammers Watershed

The Lammers Watershed is a large area contiguous to the west of urbanized portions of the City of Tracy and is substantially undeveloped at present. It covers existing development areas (as described below) as well as many of the City's larger planning areas proposed for development in the future, including much of the Specific Plan Area. Excluding the off-site watersheds that extend into the hills to the southwest and upstream of Interstate 580, the Lammers Watershed consists of an area of about 8.6 square miles. The Lammers Watershed is roughly bounded by Mountain House Parkway on the west, Interstate 580 on the south (plus off-site watersheds extending upstream to the southwest of Interstate 580), Lammers Road on the east, and Interstate 205 and Grant Line Road on the north. Existing development in the Lammers Watershed includes the east portions of Patterson Pass Business Park, the Safeway Distribution Center, and the OI Thermal Energy Development industrial site, all on the south side of Old Schulte Road between Mountain House Parkway and Lammers Road, Kimball High School on the east side of Lammers Road south of Eleventh Street, and large agricultural properties.

Other existing drainage features within the Lammers Watershed include agricultural ditches and tailwater ponds, and low capacity tailwater ditches that drain to WSID tailwater conveyance facilities. WSID's Upper and Lower Main Canals also traverse across the watershed and intercept various upstream irrigation discharges and stormwater flows. The WSID Sub-Main Drain tailwater ditch extends northwesterly along the south side of Byron Road between Interstate 205 (near Lammers Road) and the alignment of San Jose Road, and then turns north, crossing Byron Road and the Union Pacific Railroad and joins the WSID Main Drain to the north on the east side of San Jose Road. The WSID Main Drain continues northwesterly for another 2 miles and then discharges to the WSID intake facility at the intersection of

Bethany Road and Wicklund Road. The WSID intake facility connects with Old River to the north.

Local sub-basins within the Lammers Watershed are defined by topography and the alignment of canals and ditches, streets and highways. Patterson Pass Business Park (east of the Specific Plan Area) and the Safeway Distribution Center (south of the Specific Plan Area) include detention basins on those sites that provide attenuation of on-site runoff during major storms (such as the 10-year and 100-year storms) but provide little attenuation during minor storms. These existing industrial developments discharge storm runoff to an existing channel on the north side of Old Schulte Road within the Specific Plan Area that eventually loses definition about 1 mile north of Old Schulte Road. The OI Thermal Energy Development industrial site drains to a terminal retention pond on its site.

The WSID Upper Main Canal drains in a southeasterly direction as it extends through the Specific Plan Area and the Lammers Watershed, continues easterly as open canal and closed conduits and ultimately discharges to City of Tracy storm drainage facilities in the eastern urbanized portion of the City. The discharge to City storm drainage facilities is regulated by a drainage agreement between the City of Tracy and WSID.[7]

There are two off-site sub-basins (OFF2 and OFF3) that extend into the hills upstream to the southwest of Interstate 580 that will occasionally generate significant rates and volumes of runoff, which can enter the Lammers Watershed during major storms. However, generally, these off-site sub-basins do not contribute runoff that will enter the Lammers Watershed during the more frequent, lower intensity storms of short duration.

[7] Certain of the Cordes Ranch property owners have a private drainage agreement with WSID that authorizes potential future discharge to the WSID Upper Main Canal for portions of the Specific Plan Area on an interim basis until an outfall system that will serve future development within the Lammers Watershed is constructed.

ii. Mountain House Watershed

The Mountain House Watershed includes areas within the City and its SOI that are located west of Mountain House Parkway, including the westernmost portion of the Specific Plan Area. It is traversed by the Patterson Run that conveys off-site runoff generated by an upstream off-site watershed of about 6.8 square miles extending upstream into the hills to the southwest of Interstate 580. Excluding the upstream off-site watershed for the Patterson Run, the Mountain House Watershed is about 1.8 square miles in area and is bounded by Interstate 580 on the southwest (with an additional small off-site sub-basin, OFF1, extending upstream to the southwest), Interstate 205 on the north, and Mountain House Parkway on the east. The central portion of this watershed lies between the California Aqueduct and the Delta Mendota Canal and has been developed as the western portion of Patterson Pass Business Park and the Golden Gate Auto Auction. A detention basin having a storage volume of approximately 68 acre-feet has been constructed off-line from the Patterson Run channel within the Golden Gate Auto Auction development and collects runoff from existing developed areas to the south and from the small off-site sub-basin (OFF1), discharging an attenuated peak rate of 7 cfs to Patterson Run. Patterson Run enters the Golden Gate Auto Auction site via a 93" RCP culvert crossing of the California Aqueduct, exits the Auto Auction site via 2-5' x 5' CBCs that cross underneath the Delta Mendota Canal, and exits the area via two 10-foot x 10-foot CBCs that cross underneath Interstate 205. North of Interstate 205, Patterson Run discharges to existing agricultural properties and facilities operated by the Mountain House CSD.[8]

e. Groundwater and Soils

According to the Water Data Library for the San Joaquin Valley created by the California Department of Water Resources, the depth to groundwater ranges (based on available data from wells) from about 100 feet in the upland areas in the western and southern portions of the Specific Plan Area to about

[8] City of Tracy, 2012. *Cordes Ranch Specific Plan Storm Drainage Technical Report.*

20 feet in the lower elevations in the northeastern and eastern portions of the Specific Plan Area.

However, site-specific investigation, including percolation tests performed at various locations within the Specific Plan Area by Engeo Incorporated (including those locations where many of the proposed basins would be built), provides a more refined, accurate reflection of existing soils conditions. These investigations found that generally, the Specific Plan Area has a high rate of infiltration/percolation. Soil profiles resulting from the percolation testing were silty sands, sands, silty clays, sandy clays, and clays with silt at boring depths ranging from 8 feet to 13 feet. Percolation and soils information is presented in a technical letter and supporting documents prepared by Engeo Incorporated dated October 28, 2011 (Appendix I).

f. Water Quality

As discussed above, the Central Valley RWQCB has included Old River (Calwater Watershed No. 54400000) downstream of the Specific Plan Area in the Section 303(d) List of Water Quality Limited Segments Requiring Total Maximum Daily Loads (TMDLs). The listed "pollutant/stressor" is *low dissolved oxygen* and the proposed TMDL completion year is 2019.

3. Flooding

As described above, floodplain zones are determined by FEMA and used to create Flood Insurance Rate Maps (FIRMs). The most recent FIRM for San Joaquin County is dated October 16, 2009. The Specific Plan Area is designated as FEMA Zone X, No Special Flood Hazard Areas or areas determined to be outside of the 0.2 percent annual chance floodplain.[9] The 0.2 percent annual chance floodplain is also known as the 500-year return period floodplain. The Specific Plan Area is also outside of any mapped 500-year return period floodplains as of February 2012 according to the Best Available Map (BAM) Web Viewer for the State of California created by the California Department of Water Resources.

[9] FEMA, 2009. Flood Insurance Rate Map, San Joaquin County.

4. Dam Inundation

There are several dams within the greater San Joaquin River watershed that would produce downstream flooding in the event of a dam failure. Most of these dams are located along the major tributaries to the San Joaquin River and along the San Joaquin River itself in upland areas adjacent to the San Joaquin Valley. However, the Specific Plan Area is located upland from any of the lower lying areas near the valley floor that would be inundated by flooding caused by upstream dam failures. The Specific Plan Area is not within the dam inundation risk area of the San Luis Reservoir, New Melones Dam, Bethany Dam, Pine Flat Dam, New Hogan Dam, or New Exchequer Dam.[10] In addition, the Specific Plan Area is not within the inundation area identified in the San Joaquin County Dam Failure Plan, which predicts the area of inundation for 16 dams in the county.[11]

5. Seiches, Tsunamis, and Mudflows

A seiche is a wave generated in a bay or lake, which can be compared to the back-and-forth sloshing of water in a tub. Seiches can be caused by winds, changes in atmospheric pressure, underwater earthquakes, or landslides into the water. Bodies of water, including reservoirs, ponds, and swimming pools, are likely to experience seiche waves up to several feet in height during a strong earthquake. Portions of San Joaquin County and the Tracy vicinity could be subject to flooding due to seiches resulting in levee failure, or could be subject to mudflows as a result of a seiche. However, as described in subsection 4 above, the Specific Plan Area is not within the inundation zones of the major dams in the region, and would therefore not be subject to inundation risks from seiches.

A tsunami is a large sea wave generated by earthquakes. These waves travel across the ocean at hundreds of miles an hour and are capable of causing

[10] State of California, 2000. Governor's Office of Emergency Services GIS data.

[11] San Joaquin County Office of Emergency Services, 2003, *San Joaquin County Dam Failure Plan*, http://www.sjgov.org/oes/getplan/Dam_Emergency_PLAN.pdf, accessed: February 13, 2013.

waves cresting tens of feet high. Since the Specific Plan Area has no ocean frontage and is located inland approximately 55 miles from the ocean, there is no risk of inundation from a tsunami.[12]

In addition, topography of the Specific Plan Area does not include steep hillsides, which are the areas at greatest risk of mudflows during a flooding event.

C. Standards of Significance

The Project would have a significant impact with regard to hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a significant lowering of the local groundwater table level.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or 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.

---

[12] Google Maps, https://maps.google.com/maps?oe=utf-8&client=firefox-a&q=tracy,+california&ie=UTF-8&hq=&hnear=0x809014590a55994d:0xe8466f79e0af1499,Tracy,+CA&gl=us&ei=DwYkUbLeLYuzigKwhoDwBQ&ved=0CKsBELYD, accessed on February 19, 2013.

- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Potentially be inundated by seiche, tsunami, or mudflow.

D. Impact Discussion

1. Project Impacts

a. Violation of Any Water Quality Standards or Waste Discharge Requirements

i. Construction-Related Impacts

As discussed in Section 4.6, Geology and Soils, the Project includes grading and construction on up to 1,780 acres of land within the Specific Plan Area. Grading and vegetation removal would increase erosion potential and could negatively affect water quality and lead to downstream sedimentation in receiving waters. Of particular concern is the potential contribution of additional sediments and other urban pollutants to the Old River, which has been identified as a water quality limited segment under the CWA Section 303(d). Receiving waters may also include Patterson Run through the proposed detention basins.

Specifically, soil erosion may occur along the Specific Plan Area boundaries during construction in areas where temporary soil storage is required. In addition, grading and vegetation removal would increase erosion potential. Grading and construction activities also could accidentally result in the release of urban pollutants from gasoline and diesel-powered heavy equipment, such

as bulldozers, backhoes, water pumps, and air compressors, and the use of chemicals, such as solvents, paint, adhesives, excavation spoils, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, and construction wastes. A chemical release of any of these substances could degrade water quality of the surface water runoff and add pollutants into the drainage system.

However, the Project would be regulated under the NPDES Construction General Permit and would be required to prepare a SWPPP, as described in Section A.2.b.i above. The Project's SWPPP would be required to adequately address stormwater management during each construction phase of the Project, and also would be required to comply with applicable RWQCB standards and NPDES permit requirements. All SWPPPs would be subject to the City's approval. As explained above, the SWPPP would impose BMPs, such as biofiltration swales and bioretention basins, during construction that would prevent construction pollutants from contacting stormwater, with the intent of keeping all products of erosion from moving off-site into receiving waters.

The Project would also implement stormwater control measures, such as LID and BMPs, per the City's Manual of Stormwater Quality Control Standards for New Development and Redevelopment, as described in Section A.3.c above. In addition, the Specific Plan contains policies that are designed to reduce water quality impacts, which the Project would be required to implement. Of relevance to the Project's construction-related impacts, the Project would be required to adhere to the following:

- Goal: Implement a range of sustainability measures aimed at conserving resources, decreasing energy and water consumption, and reducing air and water pollutants.
- Sustainability Measure:
  - Low-impact development practices will be implemented to the extent feasible, to maintain the existing hydrologic character of the drainage and manage and treat stormwater to protect the environment.

In addition, the Project would be required to implement mitigation to reduce erosion on the Specific Plan Area. For example, the Project would be required to implement: Mitigation Measure GEO-1 to reduce erosion (Section 4.6, Geology and Soils); Mitigation Measure AQ-1 to control dust during construction (see Section 4.3, Air Quality); and numerous mitigation measures to protect biological resources and aquatic habitat (see Section 4.4, Biological Resources).

Implementation of the aforementioned mitigation measures would reduce the impacts of grading and erosion during construction; however, construction of the Project could occur in phases over a period of ten to thirty years and Project-related construction activity could negatively affect downstream surface water quality during that time period. Therefore, the Project's construction impacts to water quality would be *significant* without additional mitigation.

ii. Operational Impacts

Operational activities associated with the Project have the potential to degrade water quality in downstream water bodies, in particular Old River, which is already impaired, as described above.

The Specific Plan Area is primarily undeveloped and does not contain many impervious surfaces. Development of the Project would add significant impervious surfaces to the Specific Plan Area through construction of buildings, parking areas, roadways, and other improvements. An increase in impervious surfaces has the potential to increase runoff from the Specific Plan Area, which in turn could transport urban pollutants to off-site areas.

A number of pollutants and chemicals associated with development of the Project that are typical of urban development, including pesticides, fertilizers and landscape maintenance debris, petroleum products, hydrocarbons, litter, and sediment, could enter urban runoff that is discharged from the Specific Plan Area. The impacts of urban runoff would be particularly acute during

the first storm event of the year, when accumulations of urban pollutants are flushed into the storm drain system.

However, the Project would incorporate, to the extent feasible, low impact development (LID) features, including directing drainage from impervious surfaces to bioswales for infiltration, utilizing biotreatment (natural pollutant filtering) where stormwater runs off of paved surfaces, and capturing roof drainage for reuse as irrigation. These LID features, as described in Section 6.25, Storm Drainage, of the Specific Plan, would help to further reduce flows and prevent urban pollutants from migrating to off-site areas and/or entering the City's drainage system.

In addition, as described above, development projects with 5,000 square feet of impervious surfaces and commercial development greater than 100,000 square feet, as well as several specific uses like automotive repair shops, are required to implement specific controls, as identified in the SWQC Manual, and to submit a SWQCP that demonstrates that the Project will conform to all requirements of the City standards. As such, individual development projects in the Specific Plan Area would be required to prepare a SWQCP, which would be subject to the City's approval before building permits or use permits.

Each Project developer as well as businesses that are located on-site would be also required to incorporate post-construction stormwater pollution management measures during operation of the office, commercial and business park industrial facilities developed as part of the Project. These management measures would prevent polluting stormwater discharges, and they would be monitored as required by the statewide General Permit (Water Quality Order No. 97-03-DWQ), which regulates stormwater discharges associated with industrial activities. Additionally, design of storm drainage facilities would be consistent with local, State and federal requirements, including NPDES requirements, in compliance with General Plan Objective PF-1.1, Policy P4 and other applicable federal, state, and local laws and regulations.

In addition, the Specific Plan contains policies that are designed to further reduce the impacts of increased stormwater flow on- and off-site and reduce the impacts of urban runoff to water quality, as follows:

- Goal: Implement a range of sustainability measures aimed at conserving resources, decreasing energy and water consumption, and reducing air and water pollutants.
- Sustainability Measures:
  - Landscaping will consist of native species selected for water-efficient characteristics and will include drought tolerant planting materials common to the region.
  - Turf will be discouraged and minimized throughout the project.
  - Irrigation systems and devices will be water efficient and will include satellite soil moisture based irrigation controls and systems.
  - The landscape design will meet or exceed requirements of the Water Efficient Landscape Ordinance.
  - A purple pipe system will be constructed as part of the infrastructure for the project. Reclaimed water will be utilized for landscape irrigation of public and private landscaped areas when available.
  - Watering of non-vegetated surfaces and practices for cleaning outdoor surfaces and vehicles will be restricted and included in the CC&R's.
  - Low-impact development practices will be implemented to the extent feasible, to maintain the existing hydrologic character of the drainage and manage and treat stormwater to protect the environment.
  - Stormwater best management practices (BMPs) including vegetated bioswales, vegetated detention basins, and pervious paving will be incorporated to the extent feasible, into individual development sites and along streets per the San Joaquin County requirements.

However, operational activities associated with the Project could negatively affect downstream surface water quality without ensuring compliance with

applicable State and local requirements. Therefore, the Project's impacts to water quality during operation of the Project would be *significant* without additional mitigation.

b. Substantial Depletion of Groundwater Supplies or Substantial Interference with Groundwater Recharge Such That There Would Be a Net Deficit in Aquifer Volume or a Significant Lowering of the Local Groundwater Table Level

As discussed in Chapter 4.15 of this Draft EIR and the approved Cordes Ranch Water Supply Assessment (WSA), the City would be the water supplier for the Project. Pursuant to the findings of the 2001 Bookman-Edmonston study, the City can sustainably extract up to 9,000 acre-feet per year (af/yr) of local groundwater without adverse impact to groundwater resources or quality in the Tracy area over a 50-year timeframe.[13] In recent years, since the City's acquisition of additional surface water supplies from the South County Water Supply Project from the SSJID, groundwater use by the City has decreased significantly. Because the hard, high-TDS groundwater is of poorer quality compared with the City's surface water sources, the City is planning to scale back its future groundwater extractions during normal years. For example, at buildout of the General Plan, groundwater production in normal years is anticipated to be approximately 2,500 af/yr. Overall, the City's use of groundwater is anticipated to decrease as low as 2,500 af/yr by 2015, compared to the current use of 9,000 af/yr.[14]

The WSA concludes that the City's existing and future water supplies are sufficient to meet the City's existing and projected future water demands, including those future water demands associated with the Project, to the year 2030 under all hydrologic conditions. Because the projected water demand of the Project would not substantially deplete the City's groundwater supplies,

[13] West Yost Associates, 2013. *Water Supply Assessment for Cordes Ranch Specific Plan*.

[14] West Yost Associates, 2013. *Water Supply Assessment for Cordes Ranch Specific Plan*.

the Project would not result in a net deficit in aquifer volume or a significant lowering of the local groundwater table level.

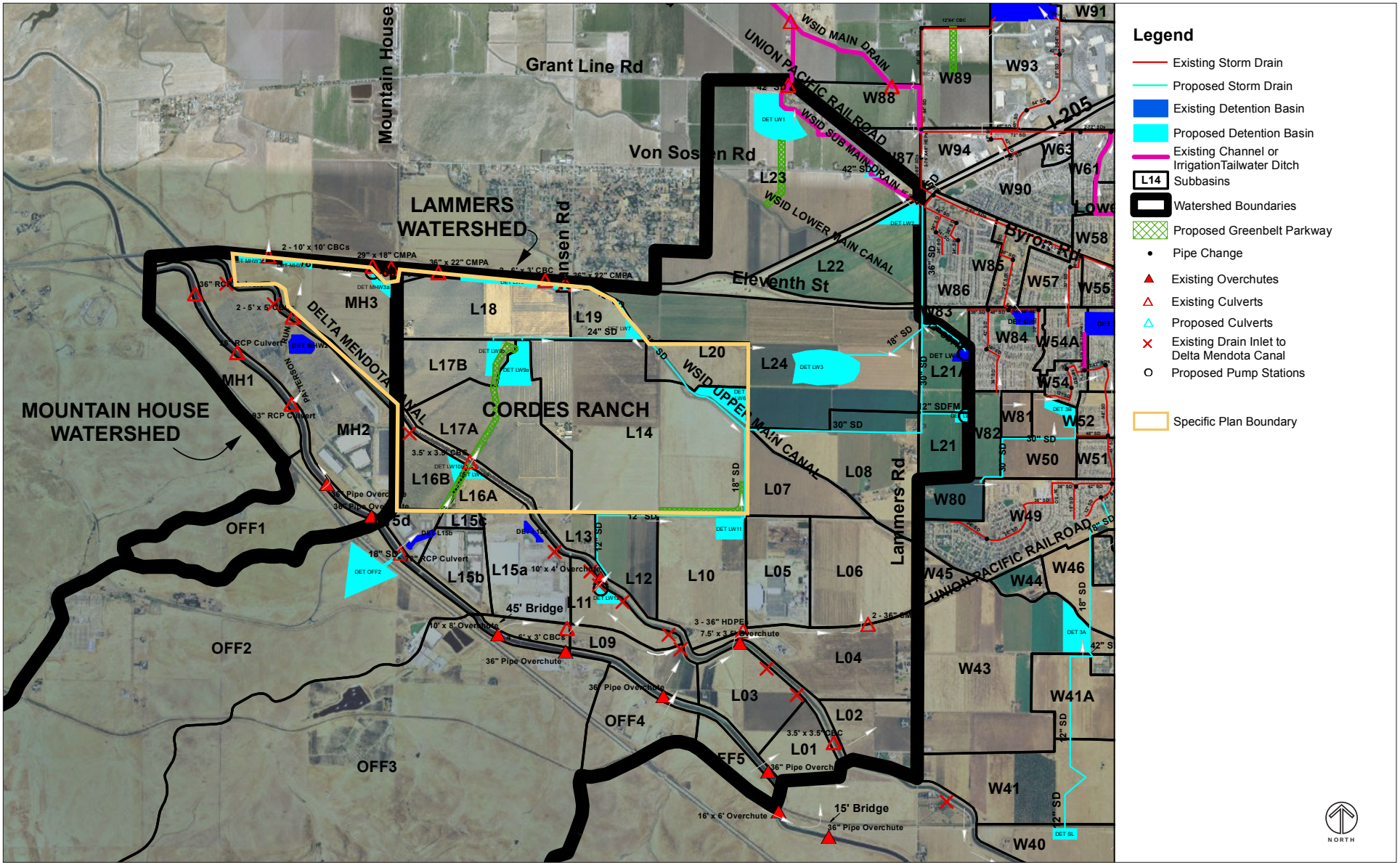
The Project would increase impervious surfaces in the Specific Plan Area, which could impact groundwater recharge. However, with a range of Project features, such as parks and open space, including detention basins, and other stormwater management features, the Project would facilitate groundwater recharge in a number of ways, and would not substantially interfere with groundwater recharge such that it would result in a net deficit in aquifer volume or a significant lowering of the local ground-water table level. Overall, because the projected water demand of the Project would not substantially deplete the groundwater supplies or interfere substantially with groundwater recharge, the impacts with respect to groundwater would be *less than significant*.

c. Substantial Alteration of the Existing Drainage Pattern of the Site or Area, Including Through the Alteration of the Course of a Stream or River, in a Manner Which Would Result in Substantial Erosion or Siltation On- or Off-Site

i. Construction-Related Impacts

The greatest potential impact with respect to erosion and siltation processes would come during construction when earthmoving and vegetation removal occurs. In addition, the Project would involve significant grading as well as the construction of new commercial, office and industrial buildings, roadways, trails, detention basins, utility placement, and other necessary infrastructure and improvements to serve the Project. Excavations and grading would be necessary to construct building pads, detention basins, transportation improvements, utilities, and other proposed improvements associated with Project development.

As shown in Figure 4.9-2, the Project's conceptual drainage plan would provide for the routing of storm runoff from all new development areas to on-site detention basins (in the future) or temporary retention facilities (in the



Source: City of Tracy, Cordes Ranch Specific Plan Storm Drainage Technical Report, December 2012.

FIGURE 4.9-2

CONCEPTUAL DRAINAGE PLAN

interim) to store and attenuate runoff rates and volumes for storm events up to and including the 100-year 24-hour storm event. As described in detail in Chapter 4.15 of this Draft EIR, the Project proposes storm drainage facility improvements in the Specific Plan Area to adequately accommodate the Project's drainage in accordance with application requirements and other standards, as well as helping to address existing drainage problems. Significantly, improvements within the Lammers Watershed:

1. Install on-site source and treatment control measures as prescribed and required per the City's Manual of Stormwater Quality Control Standards for New Development and Redevelopment.
2. Provide on-site permanent stormwater detention basins to store and attenuate storm runoff generated by new development within the Specific Plan Area, plus a specified amount of off-site storm runoff generated by the existing Patterson Pass Business Park (east) and the Safeway Distribution Center (south side of Old Schulte Road), located near the Specific Plan Area.
3. Construct temporary retention basins in conformance with the then-applicable City standards and requirements to store runoff from the Project on an interim basis until the permanent detention basins and the downstream outfall system are constructed and become operational.
4. Install storm drain pipes (ranging in diameter from 12" to 36") that would collect attenuated discharges from detention basins serving the Project (as well as certain specified off-site areas) and convey these attenuated discharges east to Lammers Road, then north along Lammers Road to the WSID Sub-Main Drain south of Byron Road.
5. Locate an off-site detention basin (DET OFF2) upstream on the south side of Interstate 580 to store the 100-year 24-hour storm runoff generated by sub-basin OFF2, which would reduce the outflow discharge rate to 5 cubic feet per second (cfs).
6. Provide adequate capacity via Mountain House Parkway to convey the full, unmitigated 100-year, 24-hour storm discharge generated from (a) the Project, (b) sub-basin OFF2, and (c) discharges from existing uses

to the east (Patterson Pass Business Park) and to the south side of Old Schulte Road prior to the construction of OFF2.

7. Provide a means of conveyance at the southeast corner of the Specific Plan Area to provide overland flow conveyance for sheet flow conditions that would occur across this location during a 100-year 24-hour storm that would otherwise impact off-site sub-basin OFF3.

In addition, the Project would construct the following improvements within the Mountain House Watershed:

1. Install on-site source and treatment control measures as prescribed by the City's Manual of Stormwater Quality Control Standards for New Development and Redevelopment.
2. Provide on-site permanent stormwater detention basins to store and attenuate storm runoff generated by new development within the Specific Plan Area.
3. Discharge all attenuated runoff from the Project developed in this watershed to Patterson Run via the installation of an overflow spillway at the inlet to the culvert where Patterson Run approaches Interstate 205 near Hansen Road, eliminating the existing shallow flooding conditions where Patterson Run approaches Interstate 205 at the end of the right-of-way.
4. Retain Patterson Run as a primarily open space corridor, although certain portions of this corridor would likely be crossed with roads, culverts, and pipes.
5. Construct temporary retention basins in conformance with applicable City standards and requirements to store runoff from the Project on an interim basis until permanent downstream facilities having capacity to convey discharges from the Patterson Run watershed are completed by the Mountain House CSD.

The on-site storm drainage facilities would be required to be sized in accordance with all applicable standards based on the Citywide Storm

Drainage Master Plan, which assumes that all flows would drain to LID systems prior to draining to the proposed basins. Until such time as permanent basins are constructed, all runoff would be handled on-site via retention basins. Once constructed, the permanent basins would handle all Project runoff, except for a nominal amount (approximately 5 cfs) under certain minor storm conditions; under these circumstances, it is anticipated that this nominal amount would be accommodated by the Mountain House CSD facilities. However, if these facilities are not available, this nominal amount would be handled on-site via creation of a small on-site pond.

Overall, because the Project would substantially alter the Specific Plan Area's existing charge pattern in a manner that may result in substantial erosion or siltation on or off-site, this impact would be *significant* without mitigation.

ii. Operational Impacts

New development within the Specific Plan Area would convert a primarily undeveloped site to a developed one. As discussed above, the Project developers as well as Project businesses would be required to incorporate post-construction stormwater pollution management measures during operation of the office, commercial, and business park industrial facilities developed as part of the Project. However, development of the Project would result in an increase in flow rates, frequency, and volumes of runoff by introducing streets, buildings, parking areas, and other impervious surfaces within the Specific Plan Area. These increases can accelerate erosion along adjacent and downstream flow paths and can produce sedimentation in areas further downstream.

Overall, due to the alteration of the existing drainage pattern during operation of the Project, the potential impacts on erosion and sedimentation processes would be *significant* without mitigation.

d. Substantial Alteration of the Existing Drainage Pattern of the Site or Area, Including Through the Alteration of the Course of a Stream or

River, or Substantial Increase in the Rate or Amount of Surface Runoff in a Manner Which Would Result in Flooding On- or Off-Site

Development of the Project would change land uses in the Specific Plan Area significantly along with the related increase in impervious surfaces, which would substantially alter the existing drainage pattern of the Specific Plan Area. To prevent substantial increases in the rate of surface runoff, the Project proposes several stormwater drainage facilities. For the larger portion of the Specific Plan Area located to the east of Mountain House Parkway, the proposed drainage plan calls for the capture, storage, and attenuation of all on-site runoff, plus additional runoff from selected upstream areas (as discussed more fully above), during storms up to and including a 100-year 24-hour storm for delivery at a metered rate to the WSID Sub-Main Drain at Lammers Road south of Byron Road. This would be an alteration of existing drainage patterns, but would also reduce existing condition flooding for several downstream properties.

For the smaller portion of the Specific Plan Area located to the west of Mountain House Parkway, the proposed drainage plan calls for the capture, storage and attenuation of all on-site runoff during storms up to and including a 100-year 24-hour storm for delivery at a metered rate to a 2-cell 10' x 10' CBC serving Patterson Run at Interstate 205. This approach would divert storm runoff from about 75 percent of this portion of the Specific Plan Area which currently drains to a smaller culvert near the Mountain House Parkway interchange at Interstate 205, to the larger culvert provided for Patterson Run. This would be an alteration of existing drainage patterns, but would also reduce downstream maintenance requirements for the Mountain House CSD.

However, because development of the Project would convert a primarily undeveloped site to a developed one, this would increase flow rates, frequency, and volumes of runoff by introducing streets, buildings, parking areas, and other impervious surfaces within the Specific Plan Area, and therefore the impact would be *significant* without mitigation.

e. Creation of or Contribution to Runoff Water Which Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff

As discussed above, development of the Project would increase local runoff volumes, frequency and flow rates. However, as detailed in Chapter 6 of the Specific Plan and as described above, the Project is designed to include storm drainage solutions as part of its land plan to adequately accommodate the Project's drainage as well as drainage from certain other existing surrounding uses in adherence to all applicable standards and requirements as set forth in the City's Storm Drainage Master Plan, which has planned for improvements that accommodate development proposed under the Project as well as other planned growth.

In addition, as discussed above and in Chapter 4.4 (Biological Resources) and Chapter 4.8 (Hazards and Hazardous Materials)), Project construction and operation would introduce constituents into stormwater that are typically associated with urban runoff. These constituents include sediments, heavy metals (such as lead, zinc, and copper), petroleum hydrocarbons, pesticides, and fertilizers. The presence of heavy equipment and trucks, as well as other vehicles in the Specific Plan Area also presents the opportunity for spills of oil and fuel. Other materials such as paint and solvents used could also accidentally be discharged to surface waters. All of these activities could lead to temporary impacts on surface water quality for downstream areas due to the increase in sediments and other pollutants.

Overall, this impact would be *significant* without mitigation.

f. Other Substantial Degradation of Water Quality

As discussed above, with the implementation of Mitigation Measures HYDRO-1a, HYDRO-1b, HYDRO-2a, HYDRO-2b, and HYDRO-2c, Project development would comply with all applicable State and local laws and regulations, and therefore would not substantially degrade water quality. Additionally, future industrial uses would be subject to the permit requirements described above. No other proposed features would

substantially degrade water quality. As a result, this impact would be *significant* without additional mitigation.

g. Placement of Housing within a 100-Year Flood Hazard Area as Mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or Other Flood Hazard Delineation Map

No housing is proposed as part of the Project, nor is the Specific Plan Area located within a 100-year flood hazard area. As a result, *no impact* would occur.

h. Placement of Structures Which Would Impede or Redirect Flood Flows within a 100-Year Flood Hazard Area

The Specific Plan Area is not located within a 100-year flood hazard area, and therefore no structures would be placed in such an area as part of the Project. Thus, *no impact* would occur.

i. Exposure of People or Structures to a Significant Risk of Loss, Injury, or Death Involving Flooding, Including Flooding As a Result of the Failure of a Levee or Dam

As described above, the Specific Plan Area is not located within the 100-year floodplain or in the dam inundation risk areas. Therefore, *no impact* would occur.

j. Potential Inundation by Seiche, Tsunami, or Mudflow

As described above, the Specific Plan Area is not located in close proximity to the areas subject to flooding due to tsunamis or seiches resulting in levee failure, and would not subject to mudflows as a result of a seiche. In addition, given the Specific Plan Area's flat topography, mudflows could not occur. As a result, a *less-than-significant* impact would occur.

2. Cumulative Impacts

This cumulative analysis considers the Project in the context of the City's General Plan, which takes into account the entire incorporated area of Tracy and the SOI. Development of the Project could contribute to cumulative

drainage flow and surface water quality impacts when combined with other cumulative development within the Tracy area. However, the City of Tracy requires that all new developments mitigate storm drainage impacts through the construction of retention/detention facilities with adequate capacity to handle flows generated by each project in accordance with applicable City standards. New development within Tracy would also be required to comply with the City's Municipal Code and General Plan policies to address water quality issues and to ensure adequate storm drainage improvements. Projects within the Lammers Watershed would be subject to WSID's drainage agreement and stormwater requirements and also be required to pay fees to address their impacts on WSID's facilities and water quality. Projects within the Mountain House watershed would be subject to the payment of fees and other requirements set forth by the Mountain House CSD to mitigate hydrology and water quality impacts. In addition, all cumulative projects would be subject to RWQCB requirements as well as other applicable federal and State laws and regulations. Therefore, cumulative impacts with respect to hydrology and water quality are not anticipated to effectively address short-term and long-term water quality impacts.

In any event, with respect to the Project, it would be required to implement Mitigation Measures HYDRO-1a, HYDRO-1b, HYDRO-2a, HYDRO-2b, and HYDRO-2c, which mandate compliance with applicable State and local requirements and set forth appropriate performance standards to ensure storm drain collection and detention/retention facilities conform to those requirements. Through continued compliance with these laws and regulations and implementation of existing policies and the aforementioned mitigation measures, development of the Project would not contribute to any cumulative impact on hydrology and water quality.

Overall, the imposition of the above-referenced measures, standards and other requirements on all cumulative developments, including the Project, would not contribute considerably to any cumulative impact with regard to hydrology and water quality with mitigation incorporated.

E. Impacts and Mitigation Measures

Impact HYDRO-1: Construction of the Project would occur in phases over a period of ten to thirty years and Project-related construction activity could negatively affect downstream surface water quality during that time period. Therefore, the Project's construction impacts to water quality would be significant without mitigation measures.

Mitigation Measure HYDRO-1a: Grading and ground disturbance on the Specific Plan Area shall be implemented in accordance with each individual development's approved grading plans and related grading permit. For the required treatment of urban pollutants and application of pesticides in the Specific Plan Area, each Project developer shall comply with the approved grading plan and related permit and conditions of approval.

Mitigation Measure HYDRO-1b: In accordance with the then-applicable regulations, as part of the application process for each individual development under the Specific Plan, each applicant shall file a Notice of Intent with the SWRCB to obtain coverage under the construction general permit (CGP) and shall comply with all of the requirements associated with the CGP, as necessary to mitigate those impacts that would result from the specific development proposed by that applicant. In addition, as part of the application process for each individual development under the Specific Plan, each applicant shall prepare and obtain City approval of a SWPPP, which shall adequately address stormwater management during each construction phase of the Project. The SWPPP shall be consistent with the then-applicable RWQCB standards and NPDES permit requirements, and shall be designed to protect water quality during the course of construction. Said BMPs may include, without limitation, the following:

- Schedule earthwork to occur primarily during the dry season to prevent most runoff erosion.

- Protect drainages and storm drain inlets from sedimentation with berms or filtration barriers, such as filter fabric fences, hay bales, or straw wattles.
- Divert runoff from exposed slopes to on-site sediment basins before the runoff is released off-site.
- Install gravel construction entrances to reduce tracking of sediment onto adjoining streets.
- Sweep on-site paved surfaces and surrounding streets daily to collect sediment before it is washed into the storm drains or the Old River.
- After construction is completed, clean all drainage culverts of accumulated sediment and debris.
- Stabilize stockpiles of topsoil and fill material by watering daily, or by the use of chemical agents.
- Store all construction equipment and material in designated areas away from waterways and storm drain inlets. Surround construction staging areas with earthen berms.
- Wash and maintain equipment and vehicles in a separate bermed area, with runoff directed to a lined retention basin.
- Collect construction waste daily and deposit in covered dumpsters.

Significance After Mitigation: *Less than Significant*

Impact HYDRO-2: Operational activities associated with the Project could negatively affect downstream surface water quality without ensuring compliance with applicable State and local requirements. Therefore, the Project's impacts to water quality during operation of the Project would be significant without mitigation measures.

Mitigation Measure HYDRO-2a: As part of the application process for each individual development under the Specific Plan, each applicant shall prepare and obtain approval of a grading plan and related permit.

Mitigation Measure HYDRO-2b: As part of the application process for each individual development project under the Specific Plan, each applicant shall submit and obtain City approval of a drainage plan to the City of Tracy for on-site measures consistent with the Cordes Ranch Conceptual Drainage Plan, the Cordes Ranch Specific Plan, the Citywide Stormwater Master Plan, and other applicable stormwater standards and requirements that shall be designed to control and treat stormwater for the storm events in compliance with the then-applicable City's Manual of Stormwater Quality Control Standards for New Development and Redevelopment, including those dealing with capacity design of the facilities and contour grading. All such measures shall be implemented as part of the development and operation of the individual development at issue.

Each developer shall construct drainage improvements and other required stormwater retention/detention facilities as necessary to serve the specific development proposed by that applicant in conformance with the approved drainage plan, the Specific Plan and the then-applicable City standards including those set forth in the City's Storm Drainage Master Plan. These drainage facilities shall accommodate events up to and including a 100-year 24-hour storm.

Mitigation Measure HYDRO-2c: As part of the development of each individual project under the Specific Plan, each developer shall implement the following measures:

- Shall not utilize chemical pesticides in the maintenance of common landscaped areas, open space areas, or parks. Fertilizers shall be applied sparingly, and shall be derived from natural sources, such as fish emulsion or manure.
- Shall cooperate with the City to create a public education program for future business owners to increase their understanding of water quality protection, which should include but not be limited to:
  - Hazardous material use controls;
  - Hazardous materials exposure controls;

- Ÿ Hazardous material disposal and recycling.

¨ Encourage the use of alternative methods to avoid hazardous materials to the extent feasible, and prohibit the dumping of hazardous materials in open space areas or the storm drain system.

¨ To the extent feasible, direct stormwater runoff to percolation swale and basin areas rather than directing stormwater to storm drain pipes.

¨ Use biotreatment (natural pollutant filtering) where stormwater runs off paved surfaces onto pervious surfaces.

¨ Utilize sediment traps, evaporation basins, flow dissipaters, and other methods to reduce the volume and speed of stormwater runoff and reduce pollutant loads.

Significance After Mitigation: *Less than Significant*

Impact HYDRO-3: Soil disturbance associated with construction activities, including movement of soils and vegetation removal in the Specific Plan Area, could cause accelerated soil erosion and sedimentation or the release of other pollutants to adjacent or downstream waterways and wetlands.

Mitigation Measure HYDRO-3: Implement Mitigation Measure HYDRO-1b.

Significance After Mitigation: *Less than Significant*

Impact HYDRO-4: The Project would increase the frequency, rate, and volume of storm runoff production when compared to existing conditions. These increases could accelerate erosion along adjacent and downstream flow paths and produce sedimentation in areas further downstream.

Mitigation Measure HYDRO-4: Implement Mitigation Measure HYDRO-2b.

Significance After Mitigation: *Less than Significant*

Impact HYDRO-5: New development within the Specific Plan Area would introduce sediments and constituent pollutants typically associated with urban non-residential development into stormwater runoff and may create opportunities for pollutants to be discharged to downstream areas and on-site wetlands. These pollutants would have the potential of degrading downstream and on-site stormwater quality.

Mitigation Measure HYDRO-5: Implement Mitigation Measures HYDRO-1a, HYDRO-1b, HYDRO-2a, HYDRO-2b, and HYDRO-2c.

Significance After Mitigation: *Less than Significant*