

4.8 HYDROLOGY, DRAINAGE, AND WATER QUALITY

4.8 HYDROLOGY, DRAINAGE, AND WATER QUALITY

This section of Draft Environmental Impact Report (Draft EIR or DEIR) for the proposed Mitchell Ranch Center project discusses and analyzes surface hydrology, storm drainage, flooding, surface water quality, and groundwater quality impacts associated with the proposed project. Information presented in this section was based primarily on a Preliminary Drainage Study prepared for the project by Baker-Williams Engineering Group as well as on review of the City's General Plan, the Department of Water Resources Bulletin 118: California's Groundwater, and flood hazard maps prepared by the Federal Emergency Management Agency (FEMA).

No comments related to hydrology, drainage, or water quality were received following publication of the Notice of Preparation/Initial Study (NOP/IS).

4.8.1 ENVIRONMENTAL SETTING

SURFACE HYDROLOGY

Surface Water Resources

The project site is located approximately 2 miles south of the Tuolumne River and 0.2 miles west of the Ceres Main Canal. The Tuolumne River originates in the Yosemite National Park area of the Sierra Nevada and drains from north to southwest through the mountain range. Once the drainage reaches the Central Valley, the topography flattens and the river flows primarily from east to west to its confluence with the San Joaquin River (DWR, 2006). The Ceres Main Canal runs west from the City of Hughson and then south through the City of Ceres just east of and parallel to Mitchell Road. The canal is part of the Turlock Irrigation District (TID) canal system (TID, 2006).

Drainage Features and Topography

The project site is primarily undeveloped and is relatively flat with no significant topographical features. The elevation of the site is approximately 92 feet above mean sea level sloping slightly from east to west. The existing soils type is mostly Hanford sandy loam and has a moderate infiltration rate (Consolidated Engineering Laboratories, August 2006, and revised September 2008, **Appendix 4.6-1**). The existing drainage system serving the site begins at Service Road with an 18-inch diameter pipe extending easterly to Mitchell Road to a 30-inch pipe which slopes north to Don Pedro Road then continues west along the frontage of the project site. This pipe conveys the existing storm runoff drainage from the project site and the street drainage for Mitchell Road, Service Road, and Don Pedro Road (Baker Williams, 2008).

Flooding and Dam Inundation

The Federal Emergency Management Agency (FEMA) prepared a Flood Insurance Rate Map (FIRM) depicting flood hazard areas in Ceres. The project site is not within a 100-year flood plain as indicated on the City of Ceres FIRM map (Panel 06099C055E and 06099C0560E, September 2008) for the City of Ceres (**Figure 4.8-1**). Although the City of Ceres is located along the south bank of the Tuolumne River, it is at an elevation sufficient to protect it from most occurrences of normal river flooding. The site is also not within the inundation area of any dam or levee system (FEMA, 2008).

Surface Water Quality

Section 303(d) of the federal Clean Water Act (CWA) requires states to identify the waters of the state that do not meet the CWA's national goal of "fishable, swimmable" and to develop total maximum daily loads (TMDLs) for such waters, with oversight of the Environmental Protection

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Agency (EPA). The only natural water body within the project area is the Tuolumne River, which is not on the Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments. However, several segments of the San Joaquin River downstream from the Tuolumne River are listed on the Section 303(d) list, indicating that the segments do not meet water quality standards. These downstream segments of the San Joaquin River are impaired by several pollutants, including boron, dichlorodiphenyltrichloroethane (DDT), Group A pesticides, mercury, and other toxins, primarily from agricultural and resource extraction sources (SWRCB, 2006).

GROUNDWATER HYDROLOGY

Groundwater Resources

The project site is located within the San Joaquin River Hydrologic Region and overlies the Turlock Groundwater Subbasin of the San Joaquin Valley Groundwater Basin (Basin 5-22.03). The Turlock Subbasin lies between the Tuolumne and Merced rivers and is bound on the west by the San Joaquin River and on the east by crystalline basement rock of the Sierra Nevada foothills. The subbasin's northern, western, and southern boundaries are shared with the Modesto, Delta-Mendota, and Merced groundwater subbasins, respectively. There are three groundwater bodies in the subbasin: the unconfined water body, the semi-confined and confined water body in the consolidated rocks, and the confined water body beneath the E-clay in the western subbasin. Groundwater flow is primarily toward the San Joaquin River, following the regional dip of basement rock and sedimentary units (DWR, 2006).

The Turlock Groundwater Subbasin has not been adjudicated,¹ has not been identified as being in overdraft, and is not regulated. Outflows from the subbasin include (1) pumping for municipal supply, (2) pumping for agricultural supply and drainage, and (3) groundwater discharges to the Merced, Tuolumne, and San Joaquin rivers (TID, 2006). In 2005, groundwater pumping from the subbasin totaled approximately 500,000 acre-feet per year (City of Turlock, 2005). On average, the subbasin water level declined nearly 7 feet between 1970 and 2000. The sub-period from 1970 to 1992 showed a generally steep decline of roughly 15 feet. Measurements taken from 1992 to 1994 showed water levels remained at this low level. In the six-year sub-period 1994 to 2000, the water levels rose about 8 feet, bringing them to approximately 7 feet below the 1970 levels (TID, 2006).

According to soil borings taken by Consolidated Engineering Laboratories in spring 2006, the depth to groundwater on the project site ranges from 24 to 26 feet below ground surface. Numerous factors contribute to groundwater level fluctuations including precipitation, irrigation both on site and on adjacent properties, and well pumping (Consolidated Engineering Laboratories, 2006). See Section 4.12 Public Services, Utilities, and Service Systems, for a further discussion of groundwater resources.

Soil Conditions and Groundwater Recharge

Subsurface soil conditions at the project site generally consist of silty sands and silts of varying densities and grain size with a clay content of approximately 12.5 percent (Consolidated Engineering Laboratories, 2006). Soils that are present on the project site consist entirely of Hydrologic Soil Group B according to information published by the Natural Resource Conservation Service (NRCS). The NRCS defines Hydrologic Soil Group B as soils having a moderate infiltration rate when thoroughly wet. These soils consist chiefly of moderately deep or

¹ Adjudication refers to a form of groundwater management in California in which a court decides the groundwater rights of all the overlayers and appropriators of a basin.



Figure 4.8-1
Flood Map



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deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Recharge of the Turlock Subbasin occurs primarily from percolation of water from Turlock Lake and the Merced, Tuolumne, and San Joaquin rivers, percolation of excess irrigation water, seepage losses from canals and ditches, rainfall within the basin, and groundwater underflows from the Sierra Nevada foothills (City of Turlock, 2005; TID, 2006). Characteristics of project site soils indicate moderate potential for groundwater recharge at the project site.

Groundwater Quality

TDS (total dissolved solids, a measure of salinity) values in the Turlock Groundwater Subbasin range from 100 to 8,300 milligrams per liter (mg/L), with a typical range of 200 to 500 mg/L. The Department of Public Health, which monitors Title 22 water quality standards, reports TDS values in 71 wells in the Turlock Subbasin ranging from 100 to 930 mg/L, with an average value of 335 mg/L. The regulatory water quality standard for TDS is the secondary maximum contaminant level (MCL) of 500 mg/L. Electrical conductivity (a surrogate for salinity and TDS measurements) values range from 168 to 1,000 $\mu\text{mhos}^2/\text{cm}$, with a typical range of 244 to 707 $\mu\text{mhos}/\text{cm}$. The regulatory water quality standard for electrical conductivity is the secondary MCL of 900 $\mu\text{mhos}/\text{cm}$. There are localized areas of hard groundwater and high nitrate, chloride, boron, and DBCP (1,2 Dibromo-3-chloropropane) concentrations. Some sodium chloride-type water with high TDS is found along the west side of the subbasin (DWR, 2006).

4.8.2 REGULATORY FRAMEWORK

FEDERAL AND STATE

Clean Water Act (CWA)

The Clean Water Act (CWA) regulates the water quality of all discharges into waters of the United States including wetlands and perennial and intermittent stream channels. Section 401, Title 33, Section 1341 of the CWA sets forth water quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." Section 404, Title 33, Section 1344 of the CWA in part authorizes the U.S. Army Corps of Engineers to:

- Set requirements and standards pertaining to such discharges;
- Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites";
- Specify the disposal sites for such permits;
- Deny or restrict the use of specified disposal sites if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas";
- Specify type of and conditions for non-prohibited discharges;

² A measurement of conductivity

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- Provide for individual state or interstate compact administration of general permit programs;
- Withdraw approval of such state or interstate permit programs;
- Ensure public availability of permits and permit applications;
- Exempt certain federal or state projects from regulation under this Section; and
- Determine conditions and penalties for violation of permit conditions or limitations.

Section 401 certification is required prior to final issuance of Section 404 permits from the U.S. Army Corps of Engineers.

The California State Water Resources Control Board and Regional Water Quality Control Boards (RWQCBs) enforce State of California statutes that are equivalent to or more stringent than the federal statutes. RWQCBs are responsible for establishing water quality standards and objectives that protect the beneficial uses of various waters and creeks. The RWQCB is responsible for protecting surface and groundwater from both point and non-point sources of pollution. Water quality objectives for all of the water bodies in the City of Ceres were established by the Central Valley RWQCB and are listed in its basin plan.

Section 402(p) of the CWA requires that the United States Environmental Protection Agency (EPA) establish a phased program to regulate stormwater discharges from municipal separate storm sewer systems (MS4s) and industrial activities. An MS4 is a conveyance system or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) designed or used for collecting or conveying stormwater.

The Phase I federal stormwater regulations were promulgated on November 16, 1990. The Phase I regulations require that stormwater permits be issued for large MS4s (serving populations of 100,000 people or more), certain industrial activities and construction activities disturbing 5 acres or more.

The Phase II federal stormwater regulations were promulgated on December 8, 1999, and require that stormwater permits be issued for small MS4s (serving populations of less than 100,000) and construction activities disturbing 1 acre or more.

The State Water Resources Control Board (SWRCB) has issued a statewide General Permit (Water Quality Order No. 99-08-DWQ) for construction activities within the state. The Construction General Permit (CGP) is implemented and enforced by the RWQCBs. The CGP applies to construction activity that disturbs one acre or more and requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that identifies best management practices (BMPs) to minimize pollutants from discharging from the construction site to the maximum extent practicable.

Certain actions during construction may also need to conform to a General Permit (Water Quality Order No. 5-00-175) that requires that a permit be acquired for dewatering and other low threat discharges to surface waters, provided that they do not contain significant quantities of pollutants and either (1) are four months or less in duration, or (2) the average dry weather discharge does not exceed 0.25 million gallons per day. Examples of activities that may require the acquisition of such a permit include well development water, construction dewatering, pump/well testing, pipeline/tank pressure testing, pipeline/tank flushing or dewatering,

condensate discharges, water supply system discharges, and other miscellaneous dewatering/low threat discharges. However, the actions applicable to site development may already be covered under the CGP; therefore, a separate permit may not be required.

The City of Ceres is located in a portion of the state that is regulated by the Sacramento Main Office of the Central Valley Regional Water Quality Control Board. The City discharges stormwater under the National Pollutant Discharge Elimination System (NPDES) Stormwater Permit No. 5B50NP00013.

Porter-Cologne Water Quality Control Act

The California Porter-Cologne Act of 1970 is largely responsible for creating the state's extensive regulatory program for water pollution control. Pursuant to the Porter-Cologne Act, the responsibility for protection of water quality in California rests with the State Water Resources Control Board, which has been divided into nine Regional Water Quality Control Boards to regulate the nine hydrologic basins in the state. The Porter-Cologne Act gives the SWRCB and RWQCBs broad powers to protect water quality by regulating waste discharges to water and land and requiring cleanup of hazardous conditions.

As required by the federal CWA and the California Porter-Cologne Act, water quality control plans have been prepared for each of the state's hydrologic basins. These water quality control plans have been prepared in order to regulate discharges that could affect the quality of state waters. Policies for water quality control adopted by the SWRCB serve as guidelines for the regional boards in the preparation of regional water quality control plans. Together, the policies of the SWRCB and the nine regional water quality control plans form the California Water Plan.

Regional Water Quality Control Board, Central Valley Region

The RWQCB provides planning, monitoring, and enforcement techniques for surface and groundwater quality in the Central Valley region. A basin plan provides more specific information for individual waterways within the region, in terms of establishing monitoring techniques to control pollutant levels within the waterways. The RWQCB also monitors stormwater quality from construction activities through the NPDES permitting process.

Health and Safety Code Section 17921.3

Effective in 1992, this section established new water-efficiency standards for restrooms in California. According to this section, the maximum flush volumes and flow rates for each of the following restroom fixtures shall be as follows:

- Water closets and associated flushometer valves can use no more than 1.6 gallons per flush.
- Urinals and associated flushometer valves may not use more than an average of 1.0 gallons per flush.
- Showerheads can use no more than 2.5 gallons per minute (gpm).
- Lavatory and sink faucets may not use more than 2.2 gpm.

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LOCAL

City of Ceres General Plan

The Agricultural and Natural Resources Element of the General Plan provides goals, policies, and implementation programs that establish the framework for the protection of valuable natural resources such as hydrologic resources in the Ceres area. **Table 4.8-1** analyzes the proposed project's consistency with applicable Agricultural and Natural Resources Element policies. While this Draft EIR analyzes the consistency of the proposed Mitchell Ranch Center project with the City of Ceres General Plan pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15125(d), the City of Ceres would ultimately make the determination of the project's consistency with the General Plan. Environmental impacts associated with inconsistency with General Plan goals and policies are addressed under the appropriate impact discussion sections of this DEIR.

**TABLE 4.8-1
PROJECT CONSISTENCY WITH CITY OF CERES GENERAL PLAN POLICIES: HYDROLOGY AND WATER QUALITY**

General Plan Policy	Consistency with General Plan	Analysis
<p>Policy 4.E.1. The City shall require new development to adequately mitigate increases in stormwater peak flows and/or volume. Mitigation measures should take into consideration impacts on adjoining lands in the city and immediately adjacent to the city in unincorporated Stanislaus County.</p>	Yes	<p>The proposed project will result in increased stormwater runoff that will be mitigated by the proposed drainage system (see Impact 4.8.1). Runoff will be retained within an underground drainage system, which was designed to provide capacity for a 50-year storm in accordance with City standards. Runoff will infiltrate into the underlying soils. Should the system's capacity be exceeded, retained stormwater runoff will be released to the City's drainage system between storm events. This system would ensure that adjoining properties are not affected by the increased stormwater runoff on the project site.</p>
<p>Policy 4.E.3. New development shall have surface drainage disposal accommodated in one of the following ways:</p> <ol style="list-style-type: none"> Positive drainage – positive drainage to a river, stream, creek, or other natural water course. Irrigation facility – drainage into an irrigation district facility, either by gravity or pumping, pursuant to the City-Turlock Irrigation District agreement. Drainage ponds – ponds, either in individual lots within a subdivision or in the case of larger developments, within a depressed portion of a common area. Drainage unit – use of french drains within depressed areas of the street right-of-way for those subdivisions or portions of subdivisions of such size that one of the 	Yes	<p>In accordance with this policy, project runoff will be retained on site via an underground drainage system which will allow for infiltration to the underlying soils (see Impact 4.8.1). Should the system's capacity be exceeded, retained stormwater runoff will be released to the City's drainage system between storm events.</p>

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General Plan Policy	Consistency with General Plan	Analysis
<p>solutions in subsections a, b, or c is not feasible, as determined by the City Engineer.</p> <p>e. On-site drainage – drainage retained on site within the development.</p> <p>Commercial development shall accommodate drainage on site unless a method described in subsections a or b above is available and the development participates in a system to address on-site drainage as approved by the City Engineer. All on-site industrial drainage shall remain on site. The City shall encourage commercial and industrial development to integrate on-site storm drainage facilities with landscaping.</p>		
<p>Policy 4.E.5. The City shall require appropriate mitigation for grading activities during the rainy season to avoid sedimentation of storm drainage facilities.</p>	Yes	<p>The proposed project will be required to comply with the statewide Construction General Permit which requires the preparation of a Stormwater Pollution Prevention Plan. This plan will require implementation of best management practices that will minimize erosion and sedimentation on the project site.</p>
<p>Policy 4.E.6. The City shall require projects that have significant impacts on the quality of surface water runoff to incorporate mitigation measures for water quality impacts related to urban runoff.</p>	Yes	<p>The proposed project will be required to comply with the statewide Construction General Permit which requires the preparation of a Stormwater Pollution Prevention Plan. This plan will require implementation of BMPs that will minimize erosion and sedimentation on the project site during construction activities.</p> <p>In addition, MM 4.8.3 would require the implementation of BMPs during project operation to reduce urban pollutants (e.g., grease, litter, fuel) in runoff and minimize impacts to water quality. These may include the use of route drainage from paved surfaces with a filtering system, use of permeable pavement in parking areas, direct downspouts to infiltration trenches, among others. These BMPs would be implemented during project operation to minimize polluted runoff entering downstream drainages.</p>
<p>Policy 4.E.9. The City shall allow stormwater detention facilities to mitigate drainage impacts and reduce storm drainage system costs. To the extent practical, stormwater detention facilities should be designed for multiple purposes, including recreational and/or stormwater quality improvement.</p>	Yes	<p>The proposed project does not include the construction of any surface detention basins. However, the Project proposes the construction of a subsurface detention and stormwater quality system to minimize these drainage impacts.</p>
<p>Policy 6.B.4. The City shall continue to require the use of feasible and practical best management practices (BMPs) to protect</p>	Yes	<p>The proposed project will be required to comply with the statewide Construction General Permit which requires the preparation of a Stormwater</p>

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General Plan Policy	Consistency with General Plan	Analysis
receiving waters from the adverse effects of construction activities and urban runoff.		Pollution Prevention Plan. This plan will require implementation of BMPs that will minimize erosion and sedimentation on the project site during the project's construction phase. In addition, MM 4.8.3 would require the implementation of BMPs during project operation to reduce urban pollutants (e.g., grease, litter, fuel) in runoff and minimize impacts to water quality.
Policy 6.C.2. The City shall encourage the control of residual pesticides to prevent potential damage to water quality, vegetation, and wildlife.	Yes	The proposed project will not require the use of substantial amounts of pesticides.
Policy 7.B.2. The City shall require evaluation of potential flood hazards prior to approval of development projects. The City shall require proponents of new development to submit accurate topographic and flow characteristics information. This will include depiction of the 100-year floodplain boundaries under fully-developed, unmitigated runoff conditions.	Yes	The project site is not located within a flood hazard zone.

Mitchell Ranch Corridor Specific Plan

The proposed Mitchell Ranch Center project is located within the Mitchell Road Corridor Specific Plan, which establishes guidelines and regulations for the development of approximately 450 acres located along a 2.5-mile stretch of Mitchell Road. The Specific Plan, however, has no policies pertaining to hydrological impacts that are applicable to the proposed project.

City of Ceres Improvement Standards

Section II-D of the City's Improvement Standards contains specific standards for various types of drainage systems relating to flow volumes, drainage and catch basin capacities, and specifications for pipes, pumps, fittings, and manholes. All improvements within the city are required to be built in accordance with these standards. The City's Improvement Standards also specify that drainage improvements are to be in accordance with accepted principles of civil engineering and the Stanislaus County Storm Drainage Design Manual. The underground drainage system will be designed to meet the 50-year, 24-hour storm event.

Ceres Water Efficient Landscape Standards and Guidelines

The City of Ceres Water Efficient Landscape Standards and Guidelines (landscape guidelines) were adopted in February 1994 to enhance the aesthetic appearance of development and reduce landscape water consumption. The landscape guidelines identify specific landscaping standards which are applied to commercial projects. The proposed project must include a concept landscape plan and a comprehensive landscape and irrigation plan. Specifications for these plans are identified in the landscape guidelines and include requirements for water use, plant types, spacing, and height to be utilized for general landscaping, as well as requirements for specific landscaping uses such as landscaping for sound walls, buffers, and other barriers.

City of Ceres Municipal Code – Chapter 13.18 Urban Water Quality Control

Chapter 13.18 of the City's Municipal Code, titled Urban Water Quality Control, contains regulations and restrictions on non-stormwater discharges to municipal separate storm sewers. The provisions of Chapter 13.18 ensure that stormwater and the pollutants it may contain are controlled to minimize impacts on the water quality of the City's groundwater supply and the surface water bodies to which stormwater may be discharged. Regulations include:

- Eliminating non-stormwater discharges to the municipal separate storm sewers which do not receive treatment before discharge to water of the state.
- Controlling the discharge to municipal separate storm drains from spills, dumping, or disposal of materials other than stormwater.
- Reducing pollutants in stormwater discharges to the maximum practicable extent.
- Regulating the amount, pollutants, and timing of stormwater discharges leaving private property which has an on-site stormwater system designed or intended to dispose of stormwater on site.
- Ensure that the storm drain system is clean and functioning to reduce the amount of stormwater that may enter the sanitary sewer system.

4.8.3 PROJECT IMPACT ANALYSIS

STANDARDS OF SIGNIFICANCE

The standards of significance for this section are based on CEQA Guidelines Appendix G. A significant impact to hydrology and water quality would occur if implementation of the proposed project would result in any of the following:

- Violate any water quality standards for 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 lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). (See Section 4.12, Public Services, Utilities and Service Systems)
- 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.

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- Otherwise substantially degrade water quality.
- 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.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

The Initial Study prepared for the proposed project (see **Appendix 1.0-1**) determined that implementation of the project would not result in any flooding impacts as the site is not located in a flood hazard zone, in the inundation area for any dam or levee system, or near a large body of water capable of seiche or tsunami. Therefore, these issues will not be addressed further in this section of the DEIR.

METHODOLOGY

The following analysis is based on the Preliminary Drainage Study prepared for the project by Baker-Williams Engineering Group in August 2007 and revised in September 2008. In addition, the following sources were utilized: the Stanislaus County Standards and Specifications; the City of Ceres Improvement Standards; the California Stormwater Quality Association's *Stormwater Best Management Practices Handbook: Construction*; information obtained from the State Water Resources Control Board website related to the Construction General Permit process and Stormwater Pollution Prevention Plans, correspondence with Turlock Irrigation District staff, and information from the Department of Water Resources on the Turlock Groundwater Subbasin and groundwater levels in the project area.

IMPACTS AND MITIGATION MEASURES

Alter On-site Drainage Patterns

Impact 4.8.1 Development of the proposed project would increase stormwater runoff rates and volumes when compared with existing conditions due to an increase in impervious surface area. This increase would not exceed the capacity of existing drainage infrastructure or result in flooding on or off site. This impact is considered **less than significant**.

Because of limitations in the existing public drainage facilities that serve the project site, the project proposes to construct an underground drainage system designed to retain a 50-year, 24-hour storm event. This system will consist of underground pipes appropriately sized for the required detention volumes and will incorporate design components to allow the detained storm runoff to infiltrate into the underlying soils. The infiltration components of the drainage conveyance system will include drain inlets with open bottoms, the first drain inlet to be a french drain, additional rock drains to be strategically placed throughout the site, and perforated pipes with crush rock backfill for the field of detention pipes south of the project. The design of the system is intended to ensure that post-construction stormwater runoff volumes do not exceed pre-construction volumes (Baker-Williams, 2008).

The soils report prepared for the proposed project indicates that the soil types range from sand to sandy silt and are conducive to infiltration. The actual infiltration rate will be determined and documented during the review of construction plans. However, should it become necessary, the on-site drainage system will connect to the City's storm drain system to allow for the release of retained stormwater runoff between storm events. Soils on adjacent properties have high

infiltration rates of 5 to 7 inches per hour (Baker-Williams, 2008). To preclude the possibility of the off-site existing drain system from backing up and impacting the intended on-site detention system, a flap gate will be installed at the last manhole prior to the connection to the City's system.

The proposed stormwater drainage system is of adequate capacity to serve the proposed project and was designed in accordance with all applicable Stanislaus County, City of Ceres, and Turlock Irrigation District standards. This impact is **less than significant**.

Mitigation Measures

None required.

Degrade Surface Water Quality/Violate Water Quality Standards During Construction

Impact 4.8.2 Construction of the proposed project will introduce sediments and other contaminants typically associated with construction into stormwater runoff, potentially resulting in the degradation of downstream water quality. This impact is **less than significant**.

Stormwater flowing over the project site during construction could carry various pollutants downstream such as sediment, nutrients, bacteria and viruses, oil and grease, metals, organics, pesticides, gross pollutants, and miscellaneous waste. These pollutants could originate from soil disturbances, construction equipment, building materials, and workers (California Stormwater Quality Association, 2003).

The State Water Resources Control Board (SWRCB) is responsible for implementing the Clean Water Act and has issued a statewide Construction General Permit (Water Quality Order 99-08-DWQ) for construction activities within the state. This permit is implemented and enforced by the various Regional Water Quality Control Boards. The CGP applies to construction activities that disturb one acre or more and requires the preparation and implementation of a Stormwater Pollution Prevention Plan that identifies best management practices (BMPs) to minimize pollutants discharging from the construction site to the maximum extent practicable).

The BMPs that must be implemented can be categorized into two major groups: (1) erosion and sediment control BMPs and (2) non-stormwater management and materials management BMPs. Erosion and sediment control BMPs fall into four main subcategories:

- Erosion controls
- Sediment controls
- Wind erosion controls
- Tracking controls

Erosion controls include methods to stabilize soil, to protect the soil in its existing location, and to prevent soil particles from migrating. Examples of erosion control BMPs are preserving existing vegetation, mulching, and hydroseeding. Sediment controls are methods designed to collect soil particles after they have migrated but before the sediment leaves the site. Examples of sediment control BMPs are street sweeping, fiber rolls, silt fencing, gravel bags, sand bags, storm drain inlet protection, sediment traps, and detention basins. Wind erosion controls prevent soil

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particles from leaving the site in the air. Examples of wind erosion control BMPs include applying water or other dust suppressants to exposed soils on the site. Tracking controls prevent sediment from being tracked off site via vehicles leaving the site. Examples of tracking controls are limiting site access points, utilizing wheel washers or hosing down exiting trucks, and requiring truck loads to be covered during transit.

Non-stormwater management and material management controls reduce non-sediment-related pollutants from potentially leaving the construction site to the extent practicable. The CGP prohibits the discharge of materials other than stormwater and authorized non-stormwater discharges (such as irrigation and pipe flushing and testing). Non-stormwater BMPs tend to be management practices with the purpose of preventing stormwater from coming into contact with potential pollutants. Examples of non-stormwater BMPs include preventing illicit discharges and implementing good practices for vehicle and equipment maintenance, cleaning, and fueling operations, such as using drip pans under vehicles. Waste and materials management BMPs include implementing practices and procedures to prevent pollution from materials used on construction sites. Examples of materials management BMPs include:

- Good housekeeping activities such as storing of materials covered and elevated off the ground, in a central location.
- Securely locating portable toilets away from the storm drainage system and performing routine maintenance.
- Providing a central location for concrete washout and performing routine maintenance.
- Providing several dumpsters and trash cans throughout the construction site for litter/floatable management.
- Covering and/or containing stockpiled materials and overall good housekeeping on the site.

Prior to construction of a project of this scale, a SWPPP must be developed that identifies the specific BMPs to be implemented and maintained on the site. A Notice of Intent must also be filed with the SWRCB.

New Legislation for Water Quality Order No. 99-08-DWG

On September 2, 2009, the State Water Resources Control Board ("State Board") adopted a new General Permit for Discharges of Storm Water Associated with Construction Activities ("CGP") that imposes significant new requirements for discharging storm water from construction sites. The CGP would apply to all construction activities disturbing one or more acres of land or to smaller areas that are part of a common plan for development, as well as to construction activities related to linear projects such as the proposed project. Previously these types of permits were covered under a separate general permit. Unless the CGP is set aside or modified, the new permit requirements will become effective on July 1, 2010.

The CGP represents a fundamental shift in storm water management practices from the existing general permit for construction activities, Order 99-08-DWQ. The existing permit contained a narrative effluent limit that required the application of Best Management Practices ("BMPs") to ensure that water quality standards were not violated. The new CGP contains Numeric Action Levels ("NALs") and, for certain "high risk" sites, Numeric Effluent Limitations ("NELs") for pH and turbidity. NALs serve as benchmarks that, if exceeded, require the discharger to apply additional

BMPs. Exceedance of an NAL does not itself constitute a violation of the CGP, but failure to take the required corrective action may result in a violation. Exceedances of NELs are violations of the CGP and could result in substantial penalties. Obviously there is a wide variation in naturally occurring turbidity, including some areas where the background levels of turbidity exceed the 500 NTU NEL established by the CGP. The State Board may reconsider the numeric limits in light of the pending rulemaking for effluent limitation guidelines that the EPA is currently undertaking.

Significant changes introduced by the CGP include:

Minimum Requirements Specified: The new CGP imposes mandatory minimum BMPs and other controls that were previously only required as elements of the Storm Water Pollution Prevention Plan ("SWPPP") or were suggested by guidance.

Rain Event Action Plan: In addition to a SWPPP, the new 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.

Increased Monitoring and Reporting: The existing permit relied primarily on visual monitoring, requiring sampling only in limited circumstances. In addition to visual monitoring of all sites, the CGP requires sampling and monitoring for non-visible pollutants at all sites, effluent and receiving water monitoring for pH and turbidity at certain high risk sites, and sampling of receiving waters for bioassessment purposes at high risk sites. Most reports—including violations of NELs, exceedances of NALs, results of receiving water monitoring, and annual reports—under the new CGP must be filed electronically within narrow time limits. All reports will be contemporaneously available online to the general public.

Post-Construction Storm Water Performance Standards: The new CGP specifies runoff reduction requirements for all sites not covered by a Phase I or Phase II MS4 NPDES permit, to avoid, minimize and/or mitigate post-construction storm water runoff impacts. The post-construction requirements do not apply to projects that will be completed (i.e., no longer covered by the CGP) by September 2, 2012.

Certification/Training Requirements for Key Project Personnel: The new CGP increases the training and certification requirements for key personnel (e.g., SWPPP preparers, inspectors, etc.). The contractor will need to prepare a Storm Water Pollution Prevention Plan (SWPPP) pursuant to Regional Water Quality Control Board standards and subject to RWQCB review for each phase of the project. The SWPPP will include measures designed to reduce or eliminate erosion and runoff into waterways. Best management practices include wattles, covering of stockpiles, silt fences and other physical means of slowing storm water flow from the graded areas to allow sediment to settle before entering storm water channels. The method used will be described in the SWPPP and may vary depending on the circumstances of construction. In the event that a formal SWPPP is not required, the construction documents contain dust and erosion control measures identical to those contained in a SWPPP, and will be implemented as part of standard construction practices. Additionally, the project will not violate any waste discharge requirements. Because of these standard procedures, and/or the need to prepare a SWPPP, project impacts to water quality are considered to be **less than significant**.

Mitigation Measures

None required.

4.8 HYDROLOGY, DRAINAGE, AND WATER QUALITY

Degrade Surface Water Quality/Violate Water Quality Standards During Operation

Impact 4.8.3 Operation of the proposed project will introduce sediments and other contaminants typically associated with urban development into stormwater runoff, potentially resulting in the degradation of downstream water quality. This impact is **potentially significant**.

The proposed project would convert the approximately 26.3-acre undeveloped site to urban uses. While the site plan includes some permeable surfaces (e.g., landscaped areas), the conversion to urban uses would substantially increase the impervious surface area, which in turn would increase runoff from roadways, parking areas, rooftops, and other surfaces that could contain oil and grease, heavy metals, chemicals, and other urban pollutants. Runoff from landscaped areas could also contribute chemicals from fertilizers, pesticides, and herbicides.

The stormwater runoff from the roof drains and the parking lot will be retained and stored in a series of oversized pipes that are designed to infiltrate the runoff, which is treated through gravel bed and wrapped in filter fabric, around the perforated pipes and dry wells. In order to prevent clogging of the system and ensuring the treatment of the first flush, the runoff from the parking lot will be pretreated by conveying the surface water through biofiltration grass swales in the landscape islands and perimeter landscaping areas, to the extent practical. Other areas of the parking lot will drain to catch basins with a sump and hooded outlet pipes. The sump will allow settlement of the sediments, and the hooded outlet pipe will prevent floatable material from entering the system. In addition, the inlets that collect runoff from Garden Center areas will be equipped with catch basin inserts in order to pre-treat and filter the runoff. The insert will consist of a series of trays, with the top tray serving as an initial sediment trap, and the underlying trays comprised of media filters. All catch basins and roof downspouts will have screens to collect larger particles & trash prior to entering the system.

The oversized pipes are sized to retain the volume of a 50 year storm event and meter the overflow through smaller pipes that connect to the existing storm drain systems along Mitchell Rd and Don Pedro Rd. The connection to the public system will incorporate a flap gate which will prevent reverse flow of water from the public line into the project.

The City of Ceres regulates pollutants in its storm drain system through Chapter 13, Water and Sewer, of the Municipal Code. This chapter includes storm drainage rules and regulations that are designed to protect water quality by prohibiting discharge of certain pollutants and requiring practicable measures to reduce pollutants. However, the Municipal Code does not identify the best management practices that projects like the proposed project must implement. Therefore, further mitigation is required to ensure project impacts to surface water quality are reduced, and the impact is considered **potentially significant**. See Impact 4.8.5 for a discussion of potential project impacts to groundwater quality.

Mitigation Measures

MM 4.8.3 Prior to approval of an improvement plan, the project proponent shall provide a list of City-approved best management practices (BMPs) to be implemented on the site during operation of the proposed project that will protect receiving waters from urban contaminants in runoff. The BMPs shall be consistent with RWQCB guidelines and shall be obtained from the California Stormwater Quality Association's Stormwater Best Management Practice (BMP) Handbooks. At least 85 to 90 percent of annual average stormwater runoff from the site shall be

treated per the standards in the 2003 California Stormwater Best Management Practices Handbooks. BMPs may include, but are not limited to, the following:

- Route drainage from paved surfaces either through swales, buffer strips, or sand filters or treat with a filtering system prior to discharge to the storm drain system.
- Use permeable pavement in parking areas and other low traffic areas.
- Direct downspouts to infiltration trenches.
- Provide stenciling or labeling of all storm drain inlets within and adjacent to the project site with prohibitive language such as "NO DUMPING."
- Cover loading dock areas, or design drainage to preclude urban run-on and runoff.
- Prohibit direct connections into storm drains from depressed loading docks. These areas should drain into water quality inlets, an engineered infiltration system, or an equally effective alternative.
- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the areas to avoid run-on. This might include berming or grading the waste storage areas to prevent run-on of stormwater.
- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage areas.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Timing/Implementation: *Prior to approval of the improvement plan*

Enforcement/Monitoring: *City of Ceres Development Services
Department – Engineering Division*

Implementation of mitigation measure **MM 4.8.3** would ensure that adequate BMPs are implemented during project operation to minimize polluted runoff entering downstream drainages. The impact will be **less than significant** with mitigation.

Degrade Groundwater Quality/Violate Water Quality Standards During Construction

Impact 4.8.4 Construction of the proposed project will introduce sediments and constituent pollutants typically associated with construction into stormwater runoff. These pollutants will not infiltrate into groundwater resources and will not degrade groundwater quality. This impact is **less than significant**.

4.8 HYDROLOGY, DRAINAGE, AND WATER QUALITY

Stormwater runoff from the project site will contain sediment and constituent pollutants normally associated with urban stormwater that could potentially contaminate groundwater resources. During the construction phase of the proposed project, groundwater resources from stormwater runoff will be protected through implementation of an approved SWPPP (see Impact 4.8.2). The SWPPP is a living document and as such can be modified as construction activities progress.

The existing irrigation wells on the project site will either be abandoned consistent with City of Ceres Engineering Standard W-12, or used to irrigate the landscaping associated with the proposed project. The well abandonment standard is based on the California Department of Water Resources Bulletin 74-81. The standard is intended to ensure that an abandoned groundwater well does not become a source of groundwater contamination. Properly abandoned wells are physically and permanently sealed against surface water infiltration. Implementation of the SWPPP and abandonment of the wells in compliance with City Standards will result in a **less than significant** impact by minimizing the ability of surface contaminants to infiltrate the groundwater. If the wells will be used for irrigation of the proposed project landscaping, they will be protected during construction and identified in the SWPPP.

Mitigation Measures

None required.

Degrade Groundwater Quality/Violate Water Quality Standards During Operation

Impact 4.8.5 Operation of the proposed project will introduce sediments and constituent pollutants typically associated with urban development into stormwater runoff. These pollutants will not infiltrate into groundwater resources and will not degrade groundwater quality. This impact is **less than significant**.

Once the project is in operation, stormwater quality will be protected through enforcement of the storm drainage rules and regulations contained in Chapter 13 of the City's Municipal Code and through implementation of the Best Management Practices under the required SWPPP (see Impact 4.8.2). In addition, an on-site drainage system will allow retained runoff to infiltrate into the underlying soils. Infiltration is an effective mechanism for pollutant control. As runoff infiltrates into the ground, particulates and attached contaminants such as metals and nutrients are removed as they become attached to soil particles. Dissolved constituents are also absorbed by soil particles (EPA, 1999). The depth to groundwater on the project site is 24 feet or more (Consolidated Engineering Laboratories, 2006). While the design of the storm drainage system is not complete, the size of the pipes in the underground system is unlikely to be greater than six feet. Allowing for over-covering and pavement, the entire system is anticipated to be ten feet or less below the existing surface. This provides between 10 and 14 feet between the bottom of the storm drainage retention system and the nearest observed groundwater of 24 feet. The amount of separation is sufficient to ensure that the storm water is treated by the soil before coming into contact with any groundwater. The system will also include means to physically separate oils and debris from the storm water before it enters into the system. Any remaining pollutants in project runoff will not contaminate groundwater supplies. In addition, as noted in Impact 4.12.2.4 (see Section 4.12, Public Services, Utilities, and Service Systems, of this Draft EIR), the project will not have an impact on groundwater supplies, since groundwater levels in the Turlock Groundwater Basin have essentially remained consistent and unchanged, with outflows generally balanced by inflows to the groundwater basin. This impact is **less than significant**.

Mitigation Measures

None required.

4.8.4. CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The project's cumulative setting, as it relates to hydrology and water quality, is the Tuolumne River watershed which includes the City of Ceres and areas to the east and west along the river. The cumulative setting for groundwater issues is the area overlying the Turlock Groundwater Subbasin.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impacts to Water Quality

Impact 4.8.6 Implementation of the proposed project, along with potential development within the City of Ceres and the Tuolumne River watershed, could contribute to cumulative drainage and water quality impacts. The project's contribution to this impact is **less than cumulatively considerable**.

Development within the cumulative setting area contributes to an overall increase in the area of impervious surfaces such as roadways, driveways, parking lots, and rooftops, resulting in increased runoff and associated urban pollutants. Development of the proposed project has the potential to contribute to this cumulative impact by paving a large portion of the project site for internal circulation and parking and by constructing several large structures with impervious rooftops.

Construction of the proposed on-site drainage retention system in accordance with City and County standards and compliance with the statewide Construction General Permit and the requirements of the NPDES permit system, as well as implementation of mitigation measure **MM 4.8.3**, will minimize the project's impacts to the local drainage system and water quality. Therefore, the project's contribution to this cumulative impact is considered **less than cumulatively considerable**.

Mitigation Measures

None required.

For cumulative impacts to groundwater supplies and aquifer recharge, please see **Section 4.12, Public Services, Utilities and Service Systems**, Impact 4.12.2.6)

4.8 HYDROLOGY, DRAINAGE, AND WATER QUALITY

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