4.8 HYDROLOGY AND WATER QUALITY

This section evaluates information regarding hydrology and water quality. It describes the existing hydrologic conditions at the project site, presents a summary of the regulatory setting, and provides an analysis of the hydrology and water quality impacts of the proposed project.

4.8.1 EXISTING SETTING

HYDROLOGY AND DRAINAGE

Regional Hydrology

The proposed project site is located within the southern portion of the Sacramento River Hydrological Region, as defined by the California Department of Water Resources (DWR). The Sacramento River Hydrological Region covers approximately 17.4 million acres (27,200 square miles). The region includes all or large portions of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Sacramento, El Dorado, Yolo, Solano, Lake, and Napa Counties. Small areas of Alpine and Amador Counties are also within the region. Geographically, the region extends south from the Modoc Plateau and Cascade Range at the Oregon border, to the Sacramento-San Joaquin Delta. The Sacramento Valley, which forms the core of the region, is bounded to the east by the crest of the Sierra Nevada and southern Cascades and to the west by the crest of the Coast Range and Klamath Mountains. Other significant features include Mount Shasta and Lassen Peak in the southern Cascades; Sutter Buttes in the south central portion of the valley; and the Sacramento River, which is the longest river system in the State of California with major tributaries being the Pit, Feather, Yuba, Bear, and American Rivers (DWR 2006).

According to the City of Elk Grove General Plan, the mean annual precipitation for Elk Grove ranges from approximately 15 to 20 inches per year. Most annual rainfall arrives during the winter storm season from November through April. Snowfall rarely occurs in the Sacramento Valley. More characteristic of the region is the dense fog occurring in mid-winter. Fog usually occurs in the morning hours and may continue for several days in a row if atmospheric conditions are stagnant.

Average summer temperatures range from a low of 60˚F to a high of above 90˚F, with temperatures in excess of 100˚F being fairly common. Temperatures can drop to near freezing during winter months.

Surface Hydrology

The project sites are located within the Grant Line Channel stormwater basin, which generally drains the Grant Line Road industrial area between SR 99 and the Union Pacific rail line. The basin is divided into two areas, the northern area, which drains to the west into the Shed C Channel and the southern area, which drains into the Grant Line Channel. Storm water drainage from Site 4 drains into the Shed C Channel and storm water drainage from Site 2 drains into the Grant Line Channel.

Drainage from Site 4 is collected within an existing street storm drainage system that includes drop inlets along Iron Rock Way and Elkmont Drive. Storm drainage from the industrial properties in the vicinity of Site 4 is collected in these drop inlets and directed into underground drainage pipes that parallel the street system. These pipes drain southwest to E. Stockton Boulevard and continue in a culvert under SR 99. The storm water flows west in the Shed C Channel on the southwest side of SR 99 to the Beach Stone Lakes area. From this area, it drains south into Snodgrass Slough and continues to the Mokelumne River, which flows into the San Joaquin River and the Suisun Bay before ultimately flowing into the San Francisco Bay and the Pacific Ocean.

Drainage from Site 2 is collected in the Grant Line channel, which is an open drainage channel that extends southeast from the western corner of the Suburban Propane facility north of Grant Line Road. The Grant Line

channel flows through a culvert under Grant Line Road and continues southeast and then northeast along the property boundary of Site 2. As the channel intersects with the Union Pacific rail line at Site 2's southeastern corner, it turns sharply to the south and continues to parallel the rail line to the southern tip of the Emerald Lakes Golf Course. A detention basin is located within the southern portion of the golf course that collects peak stormwater flows that are captured between SR 99 and the Union Pacific rail line. In addition, a pump station is located within this area that pumps stormwater into the Deer Creek drainage. At this point the channel flows east through a large box culvert under the rail line and continues southeast for approximately 1,500 feet before it connects with Deer Creek. Deer Creek continues for approximately 1,100 feet before it flows into the Cosumnes River. The Cosumnes River is tributary to the Mokelumne River, which flows into the San Joaquin River, the Suisun Bay, the San Francisco Bay and ultimately the Pacific Ocean.

During "New Years" storms that occurred at the end of December 2005, the portion of the channel directly adjacent to Site 2 was damaged. Storm water runoff from adjacent areas along this channel flowed over unprotected channel side slopes causing erosion to the channel slopes and bank sloughing. Grant funding was later provided from the California Office of Emergency Services to the City to implement necessary channel improvements (City of Elk Grove 2008a).

Soil Types

Site 4 includes three separate soil types. The single parcel located west of Iron Rock Way consists entirely of San Joaquin-Galt complex with leveled, 0 to 1 percent slopes. This soil type is moderately well drained and includes a combination of silt loam and clay loam. The majority of the site to the east of Iron Rock Way include San Joaquin silt loam with leveled, 0 to 1 percent slopes. This soil type is moderately well drained and includes a combination of silt loam, clay loam and stratified sandy loam to loam. Both of these soil types occur at elevations between 20 and 500 feet above mean sea level. The southeastern corner of the site east of Iron Rock Way includes Galt clay with leveled, 0 to 1 percent slopes. This soil type is moderately well drained and consists entirely of clay. This soil occurs at elevations between 10 and 150 feet above mean sea level (NRCS 2009).

Site 2 includes two of the three soil types found on Site 4. The majority of the site contains San Joaquin silt loam with leveled, 0 to 1 percent slopes. However, the site's eastern boundary contains San Joaquin-Galt complex with leveled, 0 to 1 percent slopes. As described above, both of these soil types are moderately well drained (NRCS 2009).

Flood Control and Storm Drainage Master Plan

The City has recognized the need for a comprehensive master planning study to evaluate the major existing drainage facilities serving the City and to define the major facilities to serve future development to accommodate the approved land uses depicted in the City's General Plan.

Although the Federal Emergency Management Agency (FEMA) designations of flood zones for the two potential project sites are Zone X (areas determined to be outside the 100-year and 500-year floodplains), flooding is a major concern within many areas of the City. This is primarily the case in the City's eastern portion where major drainage facilities have not been built and where storm water flows either in natural channels or small ditches whose capacity is frequently exceeded.

To address these issues, the City is in the process of developing the Elk Grove Flood Control and Storm Drainage Master Plan (Master Plan). The Master Plan would improve and expand on existing stormwater drainage facilities throughout the City to eliminate or reduce the flooding potential and would construct new stormwater infrastructure to accommodate increased flows resulting from new development within the city.

The main objectives of the Master Plan are to: 1) Select the drainage criteria appropriate for the evaluation of existing flood control and drainage facilities and for the conceptual sizing of future facilities; 2) Determine the flood control performance level of the major existing drainage facilities serving the City and identify any

performance deficiencies; 3) Determine the potential impacts of future development on the existing major drainage facilities; 4) Conceptually identify the existing facilities upgrades and new facilities required to serve the City at buildout of the current General Plan; and 5) Conceptually identify storm water quality treatment facilities for new development as required per the City's current National Pollution Discharge Elimination Standards (NPDES) permit (City of Elk Grove 2008b).

In the area of Site 4, the Master Plan includes enlarging the underground storm drainage pipes that direct water to the Shed C Channel and upsizing the channel west of SR 99. In the area of Site 2, the Master Plan includes upsizing the detention basin and modifying the pump station located at the southern tip of the Emerald Lakes Golf Course. The City prepared an Initial Study for the Master Plan on March 7, 2008 and is currently preparing an environmental impact report for the document (City of Elk Grove 2008c).

Groundwater Hydrology

The project area is located within the Sacramento Valley Groundwater Basin and South American Sub-basin. This aquifer system underlying the Project site is part of a regional aquifer system that extends beyond Sacramento County into the Central Valley. The South American sub-basin is comprised of continental deposits of Late Tertiary to Quaternary age that are bounded on the east by the Sierra Nevada mountain range, on the west by the Sacramento River, on the north by the American River, and on the south by the Cosumnes and Mokelumne Rivers (DWR 2006). These perennial rivers generally create a groundwater divide in the shallow subsurface. It is clear that there is interaction between groundwater of adjacent sub-basins at greater depths (DWR 2006). Furthermore, this aquifer system recharges from a combination of sources including stream recharge primarily from the American, Cosumnes, Mokelumne, and Sacramento Rivers, subsurface inflows from adjacent counties, and percolation of rainfall and applied water.

The South American sub-basin aquifer system is comprised of continental deposits of Late Tertiary to Quaternary age. These deposits include Younger Alluvium (consisting of flood basin deposits, dredge tailings, and Holocene stream channel deposits), Older Alluvium, and Miocene/Pliocene Volcanics. The cumulative thickness of these deposits increases from a few hundred feet near the Sierra Nevada foothills on the east to over 2,500 feet along the western margin of the subbasin. Geologically, the Sacramento Valley is a large trough filled with sediments having variable permeability rates; as a result, wells developed in areas with coarser aquifer materials will produce larger amounts of water than wells developed in fine aquifer materials. In general, well yields in the Sacramento Valley are good and range from one-hundred to several thousand gallons per minute (DWR 2006).

Within the project vicinity, groundwater depths are estimated to be approximately 85 feet below the ground surface (Kleinfelder 2004). Groundwater depths are seasonally influenced by local pumping, rainfall, and irrigation patterns.

Surface Water Quality

Water quality is most affected by land development, agriculture, grazing, and urban runoff. Constituents found in urban runoff vary during a storm event, from event to event within a given area, and from area to area within a given watershed. Variances can be the result of differences in rainfall intensity and occurrence, geographic features, and the land use of the area, as well as vehicle traffic and the percentage of impervious surface. Furthermore, sediment runoff from construction sites without adequate erosion control measures can contribute sediments, pesticides, fertilizers, and other pollutants to receiving waters.

Groundwater Quality

The Central Valley RWQCB Basin Plan considers all groundwater in the Central Valley Region as suitable or potentially suitable, at a minimum, for municipal and domestic water supply, agricultural supply, industrial process supply, and industrial service supply, unless otherwise designated by the Central Valley RWQCB.

Groundwater contained in the water-bearing deposits underlying most of Sacramento County is of excellent mineral quality for irrigation and domestic uses (DWR 2006). Within the subbasin, calcium-magnesium and calcium-sodium bicarbonate water types are most common, according to the California Department of Water Resources. The groundwater quality in the City meets all the CCR Title 22 drinking water quality standards, with the exception of iron, manganese, and arsenic (SCWA 2005).

4.8.2 REGULATORY SETTING

FEDERAL

Federal Emergency Management Agency

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. FEMA administers the NFIP to provide subsidized flood insurance to communities that comply with FEMA regulations to limit development in floodplains. FEMA also issues Flood Insurance Rate Maps that identify land areas subject to flooding. These maps provide flood information and identify flood hazard zones in the community. FEMA has established the minimum level of flood protection for new development as the 1-in-100 Annual Exceedance Probability (i.e., 100-year flood event).

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is the lead federal agency responsible for water quality management. The Clean Water Act (CWA) is the primary federal law that governs and authorizes water quality control activities by EPA as well as the states. Various elements of the CWA address water quality. These are discussed below. Wetland protection elements of the CWA administered by the U.S. Army Corps of Engineers are discussed in Section 4.12, Biological Resources.

Federal Antidegradation Policy

The federal antidegradation policy, established in 1968, is designed to protect existing uses and water quality and national water resources. The federal policy directs states to adopt a statewide policy that includes the following primary provisions:

- existing in-stream uses and the water quality necessary to protect those uses shall be maintained and protected;
- where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the State finds that allowing lower water quality is necessary for important local economic or social development; and
- where high-quality waters constitute an outstanding national resource, such as waters of national and State parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

Water Quality Criteria/Standards

Pursuant to federal law, EPA has published water quality regulations under Title 40 of the Code of Federal Regulations (CFR). Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the act, water quality standards consist of designated beneficial uses of the water body in question and criteria that protect the designated uses. Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all

effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. As described in the discussion of State regulations below, the SWRCB and its nine RWQCBs have designated authority in California to identify beneficial uses and adopt applicable water quality objectives.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. NPDES permit regulations have been established for broad categories of discharges including point source municipal waste discharges and nonpoint source stormwater runoff.

Each NPDES permit identifies limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits.

"Nonpoint source" pollution originates over a wide area rather than from a definable point. Nonpoint source pollution often enters receiving water in the form of surface runoff and is not conveyed by way of pipelines or discrete conveyances. Two types of nonpoint source discharges are controlled by the NPDES program: (1) discharges associated with industrial activities including construction activities; and, (2) the general quality of stormwater in municipal stormwater systems. The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the maximum extent practicable. The RWQCBs in California are responsible for implementing the NPDES permit system (see the discussion of State regulations below).

Section 303(d) Impaired Waters List

Under Section 303(d) of the CWA, states are required to develop lists of water bodies that would not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the State develop a total maximum daily load (TMDL) for each of the listed pollutants. The TMDL is the amount of the pollutant that the water body can receive and still be in compliance with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. EPA must either approve a TMDL prepared by the State or disapprove the State's TMDL and issue its own. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. After implementation of the TMDL, it is anticipated that the problems that led to placement of a given pollutant on the Section 303(d) list would be remediated.

STATE

In California, the SWRCB has broad authority over water quality control issues. The SWRCB is responsible for developing 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 regulation 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 Game, and the Office of Environmental Health and Hazard Assessment.

Regional authority for planning, permitting, and enforcement is delegated to the nine regional water boards. The regional boards 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 Central Valley RWQCB is responsible for the water bodies in the project vicinity.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is California's statutory authority for the protection of water quality. The act sets forth the obligations of the SWRCB and RWQCBs under the CWA to adopt and periodically update water quality control plans, or basin plans. Basin plans are plans in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Porter-Cologne Act also requires waste dischargers to notify the RWQCBs of such activities by filing Reports of Waste Discharge and authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, or other approvals.

Water Quality Control Plan for the Sacramento and San Joaquin River Basins

The Central Valley RWQCB Basin Plan for the Sacramento River and San Joaquin River Basins adopted by the Central Valley RWQCB (2004) identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Sacramento River and San Joaquin River basins, including the Delta. State and federal laws mandate the protection of designated "beneficial uses" of water bodies.

The Basin Plan contains specific narrative and numeric water quality objectives for a number of physical properties (e.g., temperature, turbidity, suspended solids), biological constituents (e.g., coliform bacteria), and chemical constituents of concern including inorganic parameters, trace metals, and organic compounds. Water quality objectives for toxic priority pollutants (i.e., select trace metals and synthetic organic compounds) are included in the Basin Plan and the California Toxics Rule.

National Pollutant Discharge Elimination System Permits

The SWRCB and Central Valley RWQCB have required specific NPDES permits for a variety of activities that have potential to discharge pollutants to waters of the State and adversely affect water quality. To receive an NPDES permit, a Notice of Intent to discharge must be submitted to the Central Valley RWQCB and design and operational best management practices (BMPs) must be implemented to reduce the level of contaminated runoff. BMPs can include the development and implementation of regulatory measures (local authority of drainage facility design) and structural measures (filter strips, grass swales, and retention basins). All NPDES permits also have inspection, monitoring, and reporting requirements.

On September 11, 2008, the Central Valley RWQCB adopted an NPDES area-wide municipal separate storm sewer system (MS4) permit (Order No. R5-2008-0142, NPDES No. CAS082597) to allow the discharge of storm water runoff from storm drains in various jurisdictions. The NPDES permit was issued to the Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento and the County of Sacramento, referred to as Permittees. The permit specifies that these jurisdictions are given a Phase I (large MS4) designation and each Permittee is required to develop, implement and enforce stormwater management. The City of Elk Grove's Stormwater Management Program identifies the details of the permit requirements.

General Permit for Stormwater Discharges Associated with Construction Activity (General Construction Permit)

The SWRCB adopted the statewide NPDES General Construction Permit in August 1999. The State requires that projects disturbing one acre or more of land during construction file a Notice of Intent with the RWQCB to be covered under this permit. Construction activities subject to the General Construction Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce nonstormwater discharges to storm sewer systems and other waters. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must include BMPs designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project. The BMPs must address source control and, if necessary, pollutant control.

General Order for Dewatering and Other Low-Threat Discharges to Surface Waters (General Order for Dewatering)

Dewatering during construction is sometimes necessary to keep trenches or excavations free of standing water when improvements or foundations/footings are installed. Clean or relatively pollutant-free wastewater that poses little or no threat to water quality may be discharged directly to surface water under certain conditions. The Central Valley RWQCB has adopted a general NPDES permit, the General Order for Dewatering, for short-term discharges of small volumes of wastewater from certain construction-related activities. Discharges may be covered by the General Order for Dewatering provided either that they are four months or less in duration or that the average dry-weather discharge does not exceed 0.25 million gallons per day. Construction dewatering and miscellaneous dewatering/low-threat discharges are among the types of discharges that may be covered by the NPDES permit.

State Nondegradation Policy

In 1968, as required under the federal antidegradation policy described previously, the SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that the disposal of wastes into State waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the State and to promote the peace, health, safety, and welfare of the people of the State. The policy provides as follows:

a. Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the State and would not unreasonably affect present and anticipated beneficial uses of such water.

b. Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements.

Safe Drinking Water Act

As mandated by the Safe Drinking Water Act (Public Law 93-523), passed in 1974, EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary Maximum Contaminant Levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs.

EPA has delegated to the DHS the responsibility for California's drinking water program. DHS is accountable to EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by EPA.

Title 22 of the California Administrative Code (Article 16, Section 64449) defines secondary drinking water standards, which are established primarily for reasons of consumer acceptance (i.e., taste) rather than for health issues.

LOCAL

Sacramento Area Flood Control Agency

The Sacramento Area Flood Control Agency (SAFCA) was formed in 1989 by the California Legislature to coordinate regional flood control. SAFCA is a joint powers agency, combining the efforts of the City of Sacramento, the counties of Sacramento and Sutter, the American River Flood Control District, and Reclamation

District 1000. The main goal of the agency was to provide for 200-year flood protection levels. One of SAFCA's projects that relate to the Planning Area commenced in 2001 with the construction of flood protection improvements along the Cosumnes River.

Stormwater Quality Design Manual

The Stormwater Quality Design Manual for the Sacramento and South Placer Regions (Sacramento Stormwater Quality Partnership et al. 2007) outlines planning tools and requirements to reduce urban runoff pollution to the maximum extent practicable (MEP) from new development and redevelopment projects. The manual was developed through a collaborative effort of the Sacramento Stormwater Quality Partnership and the City of Roseville. The Sacramento Stormwater Quality Partnership includes Sacramento County and the cities of Elk Grove, Citrus Heights, Folsom, Galt, Rancho Cordova and Sacramento. The manual identifies projects that are subject to its requirements and the specific storm water control strategies required for projects including source control, runoff reduction and treatment control measures.

City of Elk Grove General Plan

The following policies from the Conservation and Air Quality Element the City of Elk Grove General Plan are applicable to the proposed project:

- ***Policy CAQ-1:*** *Reduce the amount of water used by residential and non-residential uses by encouraging water conservation.*
- ***Policy CAQ-5:*** *Roads and structures shall be designed, built and landscaped so as to minimize erosion during and after construction.*
- ***Policy CAQ-13:*** *Implement the City's NPDES permit through the review and approval of development projects and other activities regulated by the permit.*
- ***Policy CAQ-18:*** *Post–development peak storm water runoff discharge rates and velocities shall be designed to prevent or reduce downstream erosion, and to protect stream habitat.*
- ***Policy CAQ-20:*** *Fill may not be placed in any 100-year floodplain as delineated by currently effective FEMA Flood Insurance Rate Maps or subsequent comprehensive drainage plans unless specifically approved by the City. No fill shall be permitted in wetland areas unless approved by the City and appropriate state and federal agencies.*

City of Elk Grove Land Grading and Erosion Control Ordinance

The Land Grading and Erosion Control Ordinance is located in Chapter 44 of Title 16 of the City of Elk Grove Code. This ordinance establishes administrative procedures, standards for review, and implementation, and enforcement procedures for controlling erosion, sedimentation, other pollutant runoff, and the disruption of existing drainage and related environmental damage. The ordinance requires that prior to grading activities, a detailed set of plans be developed that include measures to minimize erosion, sediment, and dust created by improvement activities. Improvement plans must identify the alteration of the natural flow of drainage before and after grading, as well as identification of all natural and man-made drainage facilities. In general, plans must identify:

- Time of concentration; and
- Overflow time; and
- Concentrated flow times; and
- Rainfall intensity; and
- Runoff coefficient; and
- Watersheds affecting the drainage facilities to which such surface water flows drain.

Where increased drainage flows have the potential to exceed the capacity of the existing facilities, plans must identify the improvements needed to accommodate the increased flows. These improvements are typically the responsibility of the point source development (City of Elk Grove 2008d).

City of Elk Grove Water Use and Conservation Ordinance

The Water Use and Conservation Ordinance is located in Chapter 10 of Title 14 of the Elk Grove City Code. The purpose of this ordinance is to define the standards and procedures for the design, installation, and management of landscapes in order to utilize available plant, water, land, and human resources to the greatest benefit of the people of Elk Grove. The ordinance applies to new and rehabilitated landscaping for industrial, commercial, and institutional developments; to parks and other public recreational areas; to multi-family residential, common areas and model homes; and City road medians and corridors, recognizing that skillful planting and irrigation design, appropriate use of plants, and intelligent landscape management can assure landscape development that avoids excessive water demands and that is less vulnerable to periods of severe drought (City of Elk Grove 2008d).

4.8.3 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

The environmental analysis for hydrology and water quality was conducted based on a review of published information and reports regarding regional hydrology, the City of Elk Grove General Plan, the Elk Grove General Plan EIR, and field review of the project site. The effects of the proposed project were compared to environmental baseline conditions (i.e., existing conditions) to determine impacts.

THRESHOLDS OF SIGNIFICANCE

An impact is considered significant, as identified by the State CEQA Guidelines (Appendix G), if the proposed project 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 lowering of the local groundwater table level (e.g., the production rate or 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);
- 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 that would result in substantial erosion, siltation, or flooding on- or off-site;
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- 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 that would impede or redirect floodflows;
- cause the potential for inundation by seiche, tsunami, or mudflow; or
- 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.

The project would not rely on groundwater to serve the proposed facility (see Section 4.5, Utilities and Public Services) and would not place housing or other structures in a 100-year floodplain or in the vicinity of a levee or dam or interfere substantially with groundwater recharge. The project sites are not located within designated groundwater recharge zones and are not located within inundation areas for seiches, tsunamis, or mudflows and would not expose people to these events. These impacts are not evaluated further in this EIR.

IMPACTS AND MITIGATION MEASURES

IMPACT 4.8-1 Increased Runoff and Potential for Localized or Downstream Flooding. *Implementation of the proposed project would result in an increase in impervious surfaces on the potential project sites, which would lead to an increase in stormwater runoff compared to existing conditions. The increased surface runoff could result in a greater potential for on- and off-site flooding if identified improvements are not implemented. This impact would be considered significant.*

Implementation of the proposed project would create additional impervious surfaces (e.g., buildings, paved parking areas) on the project sites. The additional runoff caused by the increase in impervious surfaces would lead to an increase in localized stormwater runoff. Increased stormwater runoff could result in localized flooding on the site and on adjacent lands.

Drainage from Site 4 is collected within an existing street storm drainage system that includes drop inlets along Iron Rock Way and Elkmont Drive. Storm drainage from the industrial properties in the vicinity of Site 4 is collected in these drop inlets and directed into underground drainage pipes that parallel the street system. With development of this site, the storm water collected on the site would be connected to the underground storm drainage pipes within the roadway. These pipes drain into the Shed C Channel on the southwest side of SR 99.

In the area of Site 4, the Elk Grove Flood Control and Storm Drainage Master Plan (Master Plan) identifies the need to enlarge these underground storm drainage pipes and to upsize the Shed C Channel in order to ensure the drainage system has adequate storm water conveyance capacity for existing and proposed developments in this area.

Storm water drainage from Site 2 is collected in the Grant Line channel, an open drainage channel that parallels the site's southwestern and southeastern property boundary and extends south along the eastern boundary of the Emerald Lakes Golf Course to Deer Creek. With development of this site, the storm water collected on the site would be directed into the Grant Line channel.

In the area of Site 2, the Master Plan includes upsizing the detention basin and modifying the pump station located at the southern tip of the Emerald Lakes Golf Course in order to ensure that the drainage system has adequate storm water conveyance capacity for existing and proposed developments in this area and that localized flooding on the Emerald Lake Golf Course does not occur.

The Master Plan would improve and expand on existing storm water drainage facilities in the areas of the two potential project sites. These improvements would eliminate or reduce flooding potential and would accommodate the increased flows associated with project development on both sites. However, if the project is developed prior to implementation of the Master Plan improvements, there is the potential that the increased storm water discharges from the sites could increase the potential for localized flooding. This impact would be considered **significant**.

Mitigation Measure 4.8-1 Increased Runoff and Potential for Localized or Downstream Flooding

If the drainage system improvements identified in the Elk Grove Flood Control and Storm Drainage Master Plan are not implemented prior to the initiation of project construction, then storm water detention facilities shall be constructed on the project sites to capture any increase in storm water runoff associated with site development.

The detention facilities shall be located either in the areas designated for future waste management and waste conversion (Exhibits 3-3 and 3-4), or in other areas of the site with sufficient capacity to accommodate the site's necessary storm water detention requirements. Following the installation of the drainage system improvements identified in the Master Plan, the detention areas on the sites can be converted to their intended waste management uses.

Level of Significance after Mitigation

With implementation of the above mitigation measure, the increased storm water runoff from the project sites would not contribute to localized flooding. Therefore, the project's runoff and flooding impacts would be reduced to a less-than-significant level.

IMPACT 4.8-2 Potential for Short-Term Construction-Related Water Quality Degradation. *Implementation of the proposed project could cause short-term water quality degradation associated with construction activities. Construction activities (grading, excavation, etc.) could result in substantial stormwater discharges of suspended solids and other nonpoint source pollutants, which could drain to off-site areas, potentially degrading local surface water quality. Further, areas of exposed or stockpiled soils could be subject to sheet erosion during rain events. This impact would be considered* ***potentially significant****.*

Grading, earthmoving, excavation, utility installation, infrastructure development, and building construction would disturb the existing vegetation cover and soil of the project sites. Although both sites are generally flat, intense rainfall and associated stormwater runoff could result in short periods of sheet erosion within areas of exposed or stockpiled soils. If uncontrolled, these soil materials would flow off of the site and into local drainages. Further, the compaction of soils by heavy equipment may reduce the infiltration capacity of soils and increase the potential for runoff and downstream sedimentation.

Construction activities could result in substantial stormwater discharges of suspended solids and other pollutants into local drainage channels from the project construction sites. Construction-related chemicals (fuels, paints, adhesives, etc.) could be washed into surface waters by stormwater runoff. The deposition of pollutants (gas, oil, etc.) onto the ground surface by construction vehicles could similarly result in the transport of pollutants to surface waters by stormwater runoff or in seepage of such pollutants into groundwater. Increased turbidity could result in adverse impacts on fish and wildlife species within local water courses. Long-term effects could include increased flooding hazards caused by reduced drainage facility and channel capacity.

Nonstormwater discharges could result from activities such as construction dewatering procedures, or discharge or accidental spills of hazardous substances such as fuels, oils, concrete, paints, solvents, cleaners, or other construction materials.

Because the project could contribute substantial additional sources of polluted runoff and could substantially degrade water quality during proposed construction activities, the project would result in potentially **significant** construction-related water quality impacts.

Mitigation Measure 4.8-2 Potential for Short-Term Construction-Related Water Quality Degradation

a. The project contractor shall demonstrate compliance, through its erosion control plan and SWPPP, with all requirements of the City's Drainage Manual and Land Grading and Erosion Control Ordinance, which may include (1) restricting grading to the dry season; (2) protecting all finished graded slopes from erosion using such techniques as erosion control matting and hydroseeding; (3) protecting downstream storm drainage facilities from sedimentation; (4) use of silt fencing and hay bales to retain sediment on the project sites; (5) use of temporary water conveyance and water diversion structures to eliminate runoff; and (6) any other suitable measures. The SWPPP shall be submitted to the City for review.

b. Prior to the issuance of a grading permit or any construction activity, the project contractor shall obtain from the Central Valley RWQCB the appropriate regulatory approvals for project construction including a Section 401 water quality certification, and an NPDES stormwater permit for general construction activity, including construction dewatering activities.

c. As required under the NPDES stormwater permit for general construction activity, the project contractor shall prepare and submit the appropriate Notice of Intent and prepare the SWPPP and the erosion control plan for pollution prevention and control prior to initiating site construction activities. The SWPPP shall identify and specify the use of erosion sediment control BMPs, means of waste disposal, implementation of approved local plans, nonstormwater management controls, and inspection and maintenance responsibilities. The SWPPP shall also specify the pollutants that are likely to be used during construction and that could be present in stormwater drainage and nonstormwater discharges. A sampling and monitoring program shall be included in the SWPPP that meets the requirements of SWRCB Order 99-08-DWQ to ensure the BMPs are effective.

d. Construction techniques shall be identified that would reduce the potential runoff and the SWPPP shall identify the erosion and sedimentation control measures to be implemented. The SWPPP shall also specify spill prevention and contingency measures, identify the types of materials used for equipment operation, and identify measures to prevent or clean up spills of hazardous materials used for equipment operation and hazardous waste. Emergency procedures for responding to spills shall also be identified. BMPs identified in the SWPPP shall be used in subsequent site development activities. The SWPPP shall identify personnel training requirements and procedures that would be used to ensure that workers are aware of permit requirements and proper installation and performance inspection methods for BMPs specified in the SWPPP. The SWPPP shall also identify the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP. All construction contractors shall retain a copy of the approved SWPPP on the construction site.

Level of Significance after Mitigation

With implementation of the above mitigation measures, erosion from site soils would be minimized and pollutants would be largely captured on the site. Also, the implementation of identified spill prevention and cleanup plans would limit the potential for hazardous material spills to adversely affect storm water quality. Therefore, the project's construction-related water quality impacts would be reduced to a less-than-significant level.

IMPACT 4.8-3 Potential Long-Term Degradation of Water Quality. *The development of the potential project sites would introduce new stormwater pollutant sources. These pollutant sources would include oils and greases, petroleum hydrocarbons (gas and diesel fuels), nitrogen, phosphorus, and heavy metals. Pesticides, herbicides, and other landscape maintenance products typically used in landscape maintenance also could be present. These pollutants could adversely affect stormwater discharges from the sites. The potential water quality degradation associated with site operations would be considered* ***significant****.*

The development of the potential project sites with industrial land uses would alter the types, quantities, and timing of contaminant discharges in stormwater runoff relative to existing conditions. If this stormwater runoff is uncontrolled and not treated, the water quality of the discharge could affect off-site drainage channels and downstream waterbodies.

Water quality degradation from the discharge of urban runoff occurs when stormwater or landscaping irrigation runoff enters the storm drain system carrying contaminants found in urban environments. Stormwater may encounter oil, grease, or fuel that has collected on roadways and parking lots and convey these contaminants to the storm drain system. Water used for irrigation of landscaped areas may encounter pesticides, herbicides, and fertilizer. Water that has encountered these chemicals but that has not been absorbed by plants and soil can enter the storm drain system and be conveyed to receiving waters. The potential discharges of contaminated urban runoff from paved and landscaped areas could increase or could cause or contribute to adverse effects on aquatic

organisms in receiving waters. Urban contaminants typically accumulate during the dry season and may be washed off when adequate rainfall returns in the fall to produce a "first flush" of runoff.

The Local Enforcement Agency's Solid Waste Facilities permit for the potential project sites would prohibit the discharge of drainage containing solids, wash water, or leachate emanating from solid wastes (14 CCR Article 6). The proposed project would be required to comply with these requirements by containing waste processing operations within the interior of the transfer station building and directing all contact water into the building's interior collection system. Therefore, the discharge of drainage containing materials emanating from solid waste processing areas would not be anticipated with the proposed project.

The amount of contaminants discharged in stormwater drainage from development areas varies based on a variety of factors, including the intensity of urban uses such as vehicle traffic, types of activities occurring on-site (e.g., office, commercial, industrial), types of chemicals used on-site (e.g., pesticides, herbicides, cleaning agents, petroleum byproducts), the pollutants on street surfaces, and the amount of rainfall. The design of the storm water management system would incorporate Low Impact Development (LID) strategies including minimization of the amount of storm water generated and treatment, retention and detention in vegetated bioswales, rain gardens and oil/water separators in order to limit the contaminants entering stormwater flows. However, due to the industrial character of the proposed project, it has the potential to contribute additional sources of polluted runoff and to degrade water quality during site operations. This would be considered a **significant** water quality impact.

Mitigation Measure 4.8-3 Potential Long-Term Degradation of Water Quality

Before issuance of a grading permit, the project contractor shall obtain from the Central Valley RWQCB a general NPDES permit and shall comply with all of the permit requirements in order to minimize storm water discharges associated with site operations. In addition, the project contractor shall prepare a SWPPP and implement Best Management Practices designed to minimize sedimentation and release of products used during site operations.

Before approval of the final project design, the project contractor shall identify storm water runoff BMPs selected from the Stormwater Quality Design Manual for the Sacramento and South Placer Regions (Sacramento Stormwater Quality Partnership et al. 2007). Typical BMPs that could be used on the project site shall include, but are not limited to, catchbasin inserts, compost storm water filters, sand filters, vegetated filter strips, biofiltration swales, oil/water separators, biodetention basins, or other equally effective measures. Other BMPs shall include, but would not be limited to, administrative controls such as signage at inlets to prevent illicit discharges into storm drains, parking lot and other pavement area sweeping, public education, and hazardous waste management and disposal programs. BMPs shall identify and implement mechanisms for the routine maintenance, inspection, and repair of pollution control mechanisms. In addition, the BMPs shall be reviewed for adequacy by the City of Elk Grove, Public Works Department prior to issuance of a grading permit for the site to ensure that they will effectively remove pollutants from the site's stormwater runoff.

Level of Significance after Mitigation

The implementation of BMPs, consistent with the requirements of the site's NPDES permit and the SWPPP, would ensure that the quality of discharged water from the site would not be substantially degraded. With implementation of the above mitigation measures, the project's operational water quality impacts would be reduced to a less-than-significant level.