

3.10 HYDROLOGY AND WATER QUALITY

3.10.1 ENVIRONMENTAL SETTING

REGIONAL HYDROLOGY

The SOIA Area is located on the boundary of the Sacramento River Basin and San Joaquin River Basin.

The Sacramento River Basin has an area of approximately 27,200 square miles in land area. 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, along with small areas of Alpine and Amador counties. Geographically, the region extends south from the Modoc Plateau and Cascade Range at the Oregon border, to the Sacramento-San Joaquin Delta. The Sacramento River converges with the San Joaquin and Mokelumne Rivers at the delta in the southwest portion of the Sacramento County (DWR 2003). Seven large dams are operated in the Sacramento River Basin for purposes of water supply, irrigation, recreation, flood control, and/or hydroelectricity.

The San Joaquin River Basin is south of the Sacramento River Basin and has the Coast Ranges, Sierra Nevada, and the Tulare Basin as its western, eastern, and southern borders, respectively. The basin is approximately 31,500 square miles in land area. The Cosumnes River and its tributary Deer Creek are the closest streams to the SOIA Area. Unlike most rivers the Cosumnes River is not dammed. Currently, the river channel is confined to a single channel isolated from the historical floodplain by levees. The levees were fortified to protect development from flooding (Booth et. al 2006).

LOCALIZED DRAINAGES

The SOIA Area is located in Drainage Shed C, as identified by the City of Elk Grove's Storm Drainage Master Plan. The drainage shed is nearly 7,900 acres with an average slope of 0.10 percent from east to west (City of Elk Grove 2011). Drainage Shed C and All watersheds within the city except for Deer Creek and Grant Line Channel ultimately drain into the Stone Lakes National Wildlife Refuge. Deer Creek and Grant Line channel ultimately drain to the Cosumnes and Mokelumne Rivers, respectively (City of Elk Grove 2012).

Within the SOIA Area, runoff is directed into a series of highly maintained agricultural ditches that generally follow field boundaries. Irrigation to the vineyards is from an old SR 99 borrow pit modified as a storm/irrigation runoff holding facility that is fully maintained on the most easterly parcel of the proposed SOIA Area.

WATER CONSUMPTION

The SOIA Area is in active agricultural and has been leveled to facilitate commercial farming. The SOIA Area is currently used for dry farming and irrigated croplands, as well as vineyard operations. Though water consumption rates specifically in the SOIA Area are unavailable, an estimate can be made based on the crops grown at the site. Based on California crop information and estimated amount of water applied to each crop type, the SOIA Area is estimated to use over 597 million gallons of water a year (Table 3.10-1).

Crop Type	Average Annual Water Use per Acre		Estimated Acres within SOIA Area	Total Annual Water Usage
	Acre-Feet	Gallons		
Alfalfa	5.0	1,629,257	46.9	76,412,153
Hay Grass	1.4	456,192	626.0	285,576,192
Vineyard	1.9	619,118	380.3	235,450,575
Non-Crop uses (canal, developed, ditch, fallow, pond)	N/A	N/A	99.97	N/A
Total	8.3	2,704,567	1,153.17	597,438,921

Source: Average Annual Water Use per Acre from Johnson and Cody 2015. Crop acreages and Total Annual Water Usage estimated by AECOM 2016.

Notes: Average acre-feet applied per acre values used from Johnson and Cody 2015. For Hay Grass, the value for Grains was used. For Vineyard, the value for Vines was used.

SURFACE WATER RESOURCES AND QUALITY

The SOIA Area does not contain any undisturbed natural stream corridors. The surface water resources nearest to the SOIA Area are Deer Creek and the Cosumnes River, which are both approximately 0.5 miles from the SOIA Area. The sources of the water for these streams are precipitation and snowmelt from the Sierra Nevada mountain range. Both streams are listed as impaired water bodies on the California Clean Water Act Section 303(d). The Cosumnes River is listed for *Escherichia coli* (*E. coli*) and invasive species from unknown sources, and sediment toxicology from agricultural uses. Deer Creek is listed for iron from an unknown source (Central Valley Regional Water Quality Control Board 2010). As described in the *City of Elk Grove General Plan Background Report*, agricultural regions around Elk Grove typically have residual levels of agricultural chemicals, primarily pesticides and herbicides applied to irrigated row crops in the early to mid-20th century before they were banned (City of Elk Grove 2003). Thus, there is a likelihood of the presence of pesticides and herbicides in the soil, including within the SOIA Area, and therefore could be contained within the runoff from the SOIA Area.

NON-POINT SOURCE POLLUTION SOURCES

Non-point source pollution is pollution that cannot be tied to a discernable, confined, and discrete conveyance such as a pipe (EPA 2016a). Agricultural activities that can cause non-point source pollution include grazing, plowing, irrigation, and the application of pesticides and fertilizers. Agricultural non-point source pollution is the leading source of water quality impacts on surveyed rivers and streams, according to the National Water Quality Assessment (EPA 2016b). The primary agricultural pollutants are nutrients, sediment, animal wastes, salts, and pesticides.

GROUNDWATER RESOURCES AND QUALITY

The Sacramento Valley Groundwater Basin is the major groundwater basin in the Sacramento River hydrologic region. There are 18 groundwater subbasins. The SOIA Area is located within Groundwater Basin 5-21.65 Sacramento Valley, South American subbasin (identified locally as the Central Basin). This subbasin encompasses the area bounded on the north by the American River, on the south by the Cosumnes and Mokelumne rivers, on the west by the Sacramento River, and on the east by the Sierra Nevada mountain range. The Central Basin contains a shallow aquifer zone and a deeper aquifer zone separated by a semi-confining discontinuous clay layer. The shallow aquifer extends 200 to 300 feet below the ground surface, while the base of

the deep aquifer is approximately 1,400 feet below ground surface. Both the shallow and deeper aquifer zones provide the groundwater used in the Central Basin. The active river and stream channels where extensive sand and gravel deposits exist, particularly along the American, Cosumnes, and Sacramento River channels, recharge the aquifer system (Sacramento Central Groundwater Authority 2012). The SOIA Area is approximately ½ mile from Deer Creek and the Cosumnes River, the areas adjacent to which are considered to have medium groundwater recharge capability. The SOIA Area itself is considered to have poor groundwater recharge capability (County of Sacramento Not Dated).

Sacramento Central Groundwater Authority monitoring data shows that groundwater elevations generally declined by approximately 20 to 30 feet consistently until about 1980. Water levels recovered by about 10 feet from 1980 through 1983, and remained stable until the beginning of the 1987–1992 drought, where until 1995, water levels declined by about 15 feet. Most water levels recovered between 1995 and 2003 generally to levels higher than prior to the 1987–1992 drought. According to the Sacramento Central Groundwater Authority, “much of this recovery can be attributed to the increased use of surface water in the Central Basin, and the fallowing of previously irrigated agricultural lands transitioning into new urban development areas in accordance with the Sacramento County and City of Elk Grove General Plans” (Sacramento Central Groundwater Authority 2012).

The Sacramento Central Groundwater Authority’s South American Subbasin Alternative Submittal (Sacramento Central Groundwater Authority 2016) (Alternative Submittal) analyzed the change in groundwater storage in the Central Basin from 2005 to 2015. The difference in total annual average change in storage over the 2005 to 2015 timeframe is calculated to be approximately 4,000 acre-feet per year (afy). In terms of order of magnitude, this equates to four to five large municipal wells in the subbasin, and is representative of a basin in equilibrium where natural recharge from deep percolation, hydraulically connected rivers, and boundary subsurface inflows are keeping up with active pumping and changes in hydrology. Over the 10-year period, the basin continues to recover at its deepest points and management is now focused on working with outside agencies to keep water from leaving the basin, and improving basin conditions where and when possible, in accordance with the Central Sacramento County Groundwater Management Plan (Central Sacramento County GMP) (Sacramento Central Groundwater Authority 2016).

Groundwater storage in the recharge area underlying Elk Grove and surrounding areas is continuing to increase as a result of recharge from the construction of large conjunctive use and surface water infrastructure facilities, increased use of recycled water, and water conservation. The increase in storage in this portion of the subbasin has filled the long-term cone of depression and has eroded the ridge of higher groundwater separating it from the Cosumnes Subbasin (Sacramento Central Groundwater Authority 2016). Land subsidence, which can occur from over-pumping groundwater, has not been documented in the SOIA Area (DWR 2016a).

Groundwater quality is dependent on the geologic material of the aquifer and anthropogenic activities. The land within the SOIA Area is used for agricultural purposes and, therefore, contributes to the groundwater quality and recharge potential in the area. Non-point source pollution from agricultural is common. According to GeoTracker, the State Water Resources Control Board’s (SWRCB) data management system for sites that impact groundwater or have the potential to impact groundwater, a well in the SOIA Area has previously tested positive for barium, iron, and manganese (State Water Resources Control Board 2016).

GROUNDWATER EXTRACTION AND SUSTAINABLE YIELD

The Water Forum Agreement set the long-term average annual extraction of groundwater (i.e., sustainable yield) from the Central Basin at 273,000 afy. As shown in Table 3.10-2, groundwater extraction has been within the Water Forum Agreement’s sustainable yield from 2005 to 2015. The least amount of groundwater extraction over this period occurred in 2011 (202,324 afy) and the most occurred in 2008 (260,200 afy). The average groundwater extraction during the drought years (2011–2015) was approximately 219,000 afy (Sacramento Central Groundwater Authority 2016) (Table 3.10-2).

<u>Water User</u>	<u>Groundwater Extraction (afy)</u>										
	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015²</u>
<u>Urban</u>	<u>78,070</u>	<u>80,277</u>	<u>79,780</u>	<u>84,498</u>	<u>81,287</u>	<u>73,680</u>	<u>68,679</u>	<u>66,478</u>	<u>64,547</u>	<u>54,610</u>	<u>54,111</u>
<u>Agriculture¹</u>	<u>167,062</u>	<u>166,148</u>	<u>165,234</u>	<u>164,320</u>	<u>163,406</u>	<u>162,494</u>	<u>116,500</u>	<u>134,600</u>	<u>152,400</u>	<u>133,900</u>	<u>140,000</u>
<u>Rural</u>	<u>7,852</u>	<u>7,946</u>	<u>8,041</u>	<u>8,136</u>	<u>8,231</u>	<u>8,326</u>	<u>17,200</u>	<u>23,400</u>	<u>22,900</u>	<u>23,100</u>	<u>23,000</u>
<u>Total</u>	<u>252,984</u>	<u>254,321</u>	<u>253,055</u>	<u>256,954</u>	<u>252,924</u>	<u>244,498</u>	<u>202,379</u>	<u>224,478</u>	<u>239,847</u>	<u>211,610</u>	<u>217,111</u>
<u>Notes: afy = acre-feet per year.</u>											
¹ <u>Improved agricultural water supply requirement estimates using State DWR's IWFM Demand Calculator occurred in 2011.</u>											
² <u>Agriculture and Rural extractions for calendar year 2015 were not available and is based on the nominal average of previous 3 years.</u>											
<u>Source: Sacramento Central Groundwater Authority 2016</u>											

FLOODING AND FLOOD CONTROL

Sacramento Valley has had a history of flooding until the development of flood control systems in the area. The Cosumnes River and its tributary, Deer Creek, are the closest streams to the SOIA Area. Unlike other rivers in the Sacramento Valley, the Consumes River does not have a major dam for flood control (Booth et. al 2006). The SOIA Area is outside of regional (Cosumnes River) and local 100-year floodplains (Exhibit 3.10-1). The City of Elk Grove has amended its General Plan and zoning regulations to address flooding within a 1-in-200 chance of occurring in any given year. As noted in the City’s 200-year floodplain map, the SOIA Area is outside the limit of the 200-year floodplain model and therefore the 200-year floodplain area is undetermined within the SOIA Area (City of Elk Grove 2016a).



Source: FEMA 2012, Sacramento County 2014 adapted by AECOM in 2016

Exhibit 3.10-1

100-Year Flood Zone

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3.10.2 REGULATORY FRAMEWORK

FEDERAL

Clean Water Act

Section 303 of the 1972 Clean Water Act (CWA) requires states to adopt water quality Standards for all surface waters of the United States. Standards are based on the designated beneficial use(s) of the surface water body. In situations where multiple beneficial uses exist, the water quality standards that protect the most sensitive use are applied. The water quality standards are commonly numeric. When numerical standards cannot be applied, narrative criteria based on biomonitoring methods is used.

Section 402 of the CWA requires that certain types of construction activity comply with the regulations of the National Pollutant Discharge Elimination System (NPDES) stormwater program. The Phase II rule, issued in 1999, requires that construction activities that disturb land equal to or greater than one acre require permitting under the NPDES. In California, permitting occurs under the General Permit for Stormwater Discharges Associated with Construction Activity, issued to the SWRCB, implemented, and enforced by the nine Regional Water Quality Control Boards (RWQCBs). Effective February 14, 2011, all dischargers whose project includes clearing, grading, or stockpiling activities expected to disturb 1 or more acres of soil are required to obtain compliance under the NPDES Construction General Permit Order 2009-0009-DWQ and 2010-0014-DWQ, which amends Order Number 2009-0009-DWQ.

This General Permit requires all dischargers, where construction activity disturbs one or more acres, to take the following measures:

- ▶ Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) to include a site map(s) of existing and proposed building and roadway footprints, drainage patterns, stormwater collection and discharge points, and pre- and post-project topography.
- ▶ Describe types and placement of Best Management Practices (BMPs) in the SWPPP that will be used to protect stormwater quality.
- ▶ Provide a visual and chemical (if non-visible pollutants are expected) monitoring program for implementation upon BMP failure; and
- ▶ Provide a sediment monitoring plan if the area discharges directly to a water body listed on the 303(d) list for sediment.

To obtain coverage, the landowner must file a Notice of Intent (NOI) with the SWRCB. The notice is required to include the information listed above. When project construction is completed, the landowner must file a notice of termination.

The law requires that a permit (Section 404) be obtained from the United States Army Corps of Engineers (USACE) for any dredge or fill materials into wetlands or waters of the United States.

Floodplain Regulations

Executive Order 11988 for Floodplain Management (May 24, 1977) directs all federal agencies to evaluate potential effects of any actions it may take in the floodplain and to avoid all adverse impacts associated with modifications to floodplains. It also directs federal agencies to avoid floodplain development whenever there is a practicable alternative and to restore and preserve the natural and beneficial values served by the floodplains.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) oversees floodplains and administers the National Flood Insurance Program adopted under the National Flood Insurance Act of 1968. The program makes federally subsidized flood insurance available to property owners within communities that participate in the program. Areas of special flood hazard (those subject to inundation by a 100-year flood) are identified by FEMA through regulatory flood maps titled Flood Insurance Rate Maps. The National Flood Insurance Program mandates that development cannot occur within the regulatory floodplain (typically the 100-year floodplain) if that development results in an increase of more than 1 foot in flood elevation. In addition, development is not allowed in delineated floodways within the regulatory floodplain.

US Army Corps of Engineers

The USACE constructs and operates regional scale flood protection systems in cooperation with state and local agencies. The USACE is responsible for the Lower San Joaquin River Flood Control Project, built in the 1960s.

Reclamation and Levee Districts

Reclamation and levee districts are special districts responsible for reclaiming and/or maintaining land subject to frequent flooding via levee and dike systems within urban and rural areas. The USACE was responsible for constructing much of the levee system in the early- to mid-1900s, but then turned it over to the local reclamation and levee districts for maintenance. Reclamation and levee districts are responsible for preventing flooding within their jurisdiction by maintaining levees and related facilities such as pump stations. Reclamation and levee districts are authorized to operate through the California Department of Water Resources (DWR) and USACE.

STATE

The Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 authorized the SWRCB to provide comprehensive protection for California's waters through water allocation and water quality protection. The SWRCB implements the requirement of the Clean Water Act Section 303, indicating that water quality standards have to be set for certain waters by adopting water quality control plans under the Porter-Cologne Act.

The Porter-Cologne Act established the responsibilities and authorities of the nine RWQCBs, which include preparing water quality plans for areas in the region, identifying water quality objectives, and issuing NPDES permits and Waste Discharge Requirements (WDRs). Water quality objectives are defined as limits or levels of water quality constituents and characteristics established for reasonable protection of beneficial uses or prevention of nuisance. The Porter-Cologne Act was later amended to provide the authority delegated from the U.S. Environmental Protection Agency (U.S. EPA) to issue NPDES permits.

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

Sacramento County is within the jurisdiction of the Central Valley RWQCB, which is responsible for the preparation and implementation of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan), adopted in 1998. The last adopted revision occurred in April 2016 (Central Valley RWQCB 2016). The Basin Plan identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Sacramento River and San Joaquin River hydrologic regions, which includes waters within the County.

The Basin Plan contains specific narrative and numeric water quality objectives for a number of physical properties (e.g., temperature, dissolved oxygen, turbidity and suspended solids), biological constituents (e.g., coliform bacteria), and chemical constituents of concern, including inorganic parameters and 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, described below.

Title 22 Standards

California's drinking water quality standards are contained in Title 22 of the California Code of Regulations (CCR). Water quality standards are enforceable limits composed of two parts:

- ▶ the designated beneficial uses of water, and
- ▶ criteria (i.e., numeric or narrative limits) to protect those beneficial uses.

Municipal and domestic supply (MUN) is among the "beneficial uses" defined in CCR Section 13050(f) of the Porter-Cologne Act as uses of surface water and groundwater that must be protected against water quality degradation. MCLs drinking water standards have been adopted by the California Department of Health Services (now California Department of Public Health) pursuant to the California Safe Drinking Water Act (Title 22 of the CCR, Division 4, Chapter 15, Domestic Water Quality and Monitoring). Primary water quality objectives were established for protection of health. Secondary water quality objectives were established for aesthetic concerns (e.g., taste and odor, staining of laundry and porcelain fixtures), and at elevated levels do not pose a health hazard.

Drinking water MCLs directly apply to water supply systems "at the tap" (i.e., at the point of use by consumers in, for example, their home and office), and are enforceable by the State. California MCLs, both primary and secondary, directly apply to groundwater and surface water resources when they are specifically referenced as water quality objectives in the pertinent basin plan. In such cases, MCLs become enforceable limits by the SWRCB and RWQCBs. When fully health protective, MCLs may also be used to interpret narrative water quality objectives prohibiting toxicity to humans in water designated as a source of drinking water (MUN) in the Basin Plan.

California State Anti-degradation Policy

The SWRCB adopted a non-degradation policy aimed at maintaining high quality for waters in California. The non-degradation 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:

- ▶ 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.
- ▶ 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, which would ensure (1) pollution or nuisance would not occur and (2) the highest water quality consistent with the maximum benefit to the people of the state would be maintained.

Section 303(d) of the CWA requires that the SWRCB identify surface water bodies within California that do not meet established water quality standards. Once identified, the affected water body is included in the SWRCB's "303(d) Listing of Impaired Water Bodies," and a comprehensive program must then be developed to limit the amount of pollutant discharges into that water body. This program includes the establishment of "total maximum daily loads" (TMDL) for pollutant discharges into the designated water body. The most recent 303(d) listing for California was approved by the EPA in 2006.

California Toxics Rule and State Implementation Plan

The California Toxics Rule (CTR) was presented in 2000 in response to requirements of the EPA National Toxics Rule and establishes numeric water quality criteria for approximately 130 priority pollutant trace metals and organic compounds. The CTR criteria are regulatory criteria adopted for inland surface waters, enclosed bays, and estuaries in California that are on the CWA Section 303(c) listing for contaminants. The CTR includes criteria for the protection of aquatic life and human health.

Human health criteria (water and organism based) apply to all waters with a Municipal and Domestic Water Supply Beneficial Use designation as indicated in the basin plans. The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, also known as the State Implementation Plan (SIP), was adopted by SWRCB in 2000. It establishes provisions for translating CTR criteria, National Toxics Rule criteria, and basin plan water quality objectives for toxic pollutants into:

- ▶ NPDES permit effluent limits;
- ▶ effluent compliance determinations;
- ▶ monitoring for 2,3,7,8-TCDD (dioxin) and its toxic equivalents;
- ▶ chronic (long-term) toxicity control provisions;
- ▶ site-specific water quality objectives; and
- ▶ granting of effluent compliance exceptions.

The goal of the SIP is to establish a standardized approach for permitting discharges of toxic effluents to inland surface waters, enclosed bays, and estuaries throughout the state.

National Pollutant Discharge Elimination System Permit System and Waste Discharge Requirements

Under CWA section 402, the SWRCB and Central Valley RWQCB have adopted specific NPDES permits for a variety of activities that have potential to discharge wastes to waters of the state. The NPDES permits all involve similar processes including submittal of Notices of Intent (NOI) to discharge to the Central Valley RWQCB and

implementation of best management practices (BMPs) to minimize those discharges. The Central Valley RWQCB may also issue site-specific WDRs, or waivers to WDRs, for certain waste discharges to land or waters of the state.

National Pollutant Discharge Elimination System Permit System and Waste Discharge Requirements for Construction

The latest SWRCB General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-Division of Water Quality [DWQ]) – the Construction General Permit is applicable to all land-disturbing construction activities that would affect 1 acre of land area or more.

Construction activities subject to the Construction General Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters. The permit also requires dischargers to consider the use of post-construction permanent BMPs that will remain in service to protect water quality throughout the life of the project. Types of BMPs include source controls, treatment controls, and site planning measures.

Activities subject to the NPDES General Permit for construction activity must develop and implement a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP includes a site map and description of construction activities and identifies the BMPs that will be employed to prevent soil erosion and discharge of other construction-related pollutants, such as petroleum products, solvents, paints, and cement that could contaminate nearby water resources. A monitoring program is generally required to ensure that BMPs are implemented according to the SWPPP and are effective at controlling discharges of stormwater related pollutants.

The Construction General Permit became effective on July 1, 2010 and includes the following requirements:

- ▶ **Risk-Based Permitting Approach:** the amended General Permit establishes three levels of risk possible for a construction site. Risk is calculated in two parts: (1) Project Sediment Risk, and (2) Receiving Water Risk.
- ▶ **Rainfall Erosivity Waiver:** the amended General Permit includes the option allowing a small construction site (>1 and <5 acres) to self-certify if the rainfall erosivity value (R value) for their project's given location and time frame calculates to be less than or equal to 5 (the variable "R" in the EPA's Revised Universal Soil Loss Equation). Dischargers can access an online rainfall erosivity calculator from EPA's website.
- ▶ **Technology-Based Numeric Action Levels (NAL):** the amended General Permit includes NALs for pH and turbidity.
- ▶ **Technology-Based Numeric Effluent Limitations (NEL):** the amended General Permit contains daily average NELs for pH during any construction phase where there is a high risk of pH discharge and daily average NELs turbidity for all discharges in Risk Level 3. The daily average NEL for turbidity is set at 500 NTU (Nephelometric Turbidity Units) to represent the minimum technology that sites need to employ (to meet the traditional Best Available Technology Economically Achievable (BAT)/Best Conventional Pollutant Control Technology (BCT) standard) and the traditional, numeric receiving water limitations for turbidity.
- ▶ **Minimum Requirements Specified:** the amended General Permit imposes more minimum BMPs and requirements that were previously only required as elements of the SWPPP or were suggested by guidance.

- ▶ **Project Site Soil Characteristics Monitoring and Reporting:** the amended General Permit provides the option for dischargers to monitor and report the soil characteristics at their project location. The primary purpose of this requirement is to provide better risk determination and eventually better program evaluation.
- ▶ **Effluent Monitoring and Reporting:** the amended General Permit requires effluent monitoring and reporting for pH and turbidity in stormwater discharges. The purpose of this monitoring is to determine compliance with the NELs and evaluate whether NALs included in this General Permit are exceeded.
- ▶ **Receiving Water Monitoring and Reporting:** the amended General Permit requires Risk Level 3 dischargers to monitor receiving waters and conduct bioassessments, under certain conditions.
- ▶ **Post-Construction Storm Water Performance Standards:** the amended General Permit specifies runoff reduction requirements for all sites not covered by a Phase I or Phase II MS4 NPDES permit (Sacramento County and Elk Grove are covered under Phase I), to avoid, minimize and/or mitigate post-construction stormwater runoff impacts.
- ▶ **Rain Event Action Plan:** the amended General Permit requires certain sites to develop and implement a Rain Event Action Plan (REAP) that must be designed to protect all exposed portions of the site within 48 hours prior to any likely precipitation event.
- ▶ **Annual Reporting:** the amended General Permit requires all projects that are enrolled for more than one continuous three-month period to submit information and annually certify that their site is in compliance Draft Fact Sheet Construction General Permit -6- April 22, 2009 with these requirements. The primary purpose of this requirement is to provide information needed for overall program evaluation and public information.
- ▶ **Certification/Training Requirements for Key Project Personnel:** the amended General Permit requires that key personnel (e.g., SWPPP preparers, inspectors) have specific training or certifications to ensure their level of knowledge and skills are adequate to ensure their ability to design and evaluate project specifications that will comply with General Permit requirements.
- ▶ **Linear Underground/Overhead Projects:** the amended General Permit includes requirements for all Linear Underground/Overhead Projects (LUPs).

National Pollutant Discharge Elimination System Municipal Stormwater Permit Program

The SWRCB Municipal Storm Water Permitting Program regulates stormwater discharges from municipal separate storm sewer systems or MS4s. MS4 permits are issued in two phases. Under Phase I, which started in 1990, the RWQCBs have adopted NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area.

Sacramento County submitted and received an MS4 permit under Phase I of the MS4 implementation (Order No. R5-2002-0206) for all unincorporated areas of the County. The MS4 Permit requires the County to develop programs to control pollutants in urban stormwater runoff and evaluate the impacts of such discharges on local receiving waters.

The City of Elk Grove became a joint participant with Sacramento County’s NPDES. The permit allows the City to discharge urban runoff from MS4s in its municipal jurisdictions (Permit No. CAS082597). The permit requires that the City impose water quality and watershed protection measures for all development projects. The NPDES also requires a permit for every new construction project that implements the following measures:

- ▶ Eliminate or reduce non-stormwater discharges to stormwater systems and other waters of the nation;
- ▶ Develop and implement a stormwater pollution prevention plan (SWPPP); and
- ▶ Perform inspections of stormwater control structures and pollution prevention measures.

Senate Bill 318 – Urban Water Management Planning Act

Each urban water supplier in California is required to prepare an urban water management plan (UWMP) and update the plan on or before December 31 in years ending in 5 and 0, pursuant to California Water Code Sections 10610–10657, as last amended by Senate Bill (SB) 318 (Chapter 688, Statutes of 2004), the Urban Water Management Planning Act. SB 318 is the 18th amendment to the original bill requiring an UWMP, which was initially enacted in 1983. Water supply and demand is discussed in in Section 3.15 of this EIR, “Utilities and Service Systems.”

Senate Bill 610

SB 610 (Chapter 643, Statutes of 2001) became effective January 1, 2002. The purpose of SB 610 is to strengthen the process by which local agencies determine whether current and future water supplies are adequate and sufficient to meet current and future demand. SB 610 amended the California Public Resources Code to incorporate California Water Code requirements within the CEQA process. SB 610 also amended the California Water Code to broaden the types of information required to be included in an UWMP (California Water Code Section 10610 et seq.). Water supply and demand is discussed in Section 3.15 of this EIR, “Utilities and Service Systems.”

Senate Bill 221

SB 221 (Chapter 642, Statutes of 2001) requires a county or city to include as a condition of approval of any tentative map, parcel map, or development agreement for residential subdivisions of more than 500 units or a 10 percent increase for public systems with fewer than 5,000 connections that a “sufficient water supply” be available. Proof of a sufficient water supply must be based on a written verification from the public water system that would serve the development. To determine “sufficient water supply”, the water supplier must consider:

- ▶ the availability of water supplies over a historical record of at least 20 years;
- ▶ the applicability of an urban water shortage contingency analysis;
- ▶ any reductions in water supply allocated to a specific water use sector pursuant to an adopted resolution or ordinance or contractual obligation on the part of the public water system; and
- ▶ the amount of water that the water supplier can reasonably rely on receiving from other water supply projects.

The written verification of a water supplier's ability or inability to provide sufficient water to a subdivision needs to be supported by substantial evidence, which may include the public water system's most recently adopted urban water management plan or other information relating to the sufficiency of the water supply. Water supply and demand is discussed in Section 3.15 of this EIR, "Utilities and Service Systems." Potential groundwater impacts associated with water supply is described below.

Recycled Wastewater Requirements

Wastewater recycling in California is regulated under Title 22, Division 4 of the CCR under the jurisdiction of the California Department of Public Health. The intent of these regulations is to ensure protection of public health associated with the use of recycled water. Title 22 regulations establish acceptable levels of constituents in recycled water for a range of uses and stipulate means for ensuring reliability in the production of recycled water.

Recycled water is commonly given non-potable uses and is an effective means of conserving water. The California Department of Public Health has jurisdiction over the distribution of recycled wastewater and the enforcement of Title 22 regulations. The RWQCB is responsible for issuing WDRs (including discharge prohibitions, monitoring, and reporting programs). The RWQCB is also responsible for reuse requirements associated with implementing wastewater reclamation projects. Title 17, Division 1 of the CCR establishes requirements for protection of potable water systems where potable water and recycled water could cross contaminate.

California Department of Water Resources

The California Department of Water Resources (DWR) is responsible for preparation of the California Water Plan, management of the State Water Project (SWP), regulation of dams, provision of flood protection, and other functions related to surface water and groundwater resources.

FloodSAFE California

FloodSAFE California is a program launched in 2006 by DWR to guide the development of regional flood management plans to better identify and address flood hazards and to improve integrated flood management systems statewide with an emphasis on the Central Valley.

Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova

In its seminal decision dealing with water supplies for long-term land use planning under CEQA, *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, the California Supreme Court articulated the following requirements for an adequate water supply analysis under CEQA:

1. The EIR must contain information on planned long-term development in the area, and identify the competing water demands associated with such development. (Id. at p. 445.)
2. The EIR must demonstrate a reasonable likelihood of adequate long-term supply by showing "a rough balance between water supply and demand." Where, "[d]espite a full discussion, it is impossible to confidently determine that anticipated future water sources will be available, CEQA requires some discussion of possible replacement sources or alternatives to use of the anticipated water, and of the environmental consequences of

those contingencies.” The estimate of demand must include not only the proposed project, but also other planned development in the area. (Id. at pp. 445-446.)

3. The EIR must address the environmental impacts of the water sources needed to serve the proposed development and must identify any mitigation measures needed to lessen or avoid any significant effects. To the extent the EIR relies upon water supply analyses prepared for other projects, the EIR must adhere to the rules governing tiering and incorporation by reference. Among other things, the EIR for the development project must incorporate and adopt the mitigation measures identified in the EIR that is being relied upon. (Id. at p. 446.)
4. Although an agency may rely on a provision calling for curtailing the later stages of development if water supplies do not materialize, the EIR must disclose or propose mitigation for “the environmental effects of such truncation.” (Id. at p. 447.)

Sustainable Groundwater Management Act

In 2014, the California Legislature enacted a three-bill law (Assembly Bill-1739, Senate Bill [SB]-1168, and SB-1319), known as the Sustainable Groundwater Management Act (SGMA). The SGMA was created to provide a framework for the sustainable management of groundwater supplies. The SGMA is intended to empower local agencies to adopt groundwater management plans that are tailored to the resources and needs of their communities, such that sustainable management would provide a buffer against drought and climate change, and ensure reliable water supplies regardless of weather patterns. The SGMA is considered part of the statewide, comprehensive California Water Action Plan that includes water conservation, water recycling, expanded water storage, safe drinking water, and wetlands and watershed restoration. The SMGA protects existing surface water and groundwater rights and does not affect current drought response measures (Association of California Water Agencies [ACWA] 2014).

The SGMA requires that local agencies form a local groundwater sustainability agency within two years (i.e., by 2017). This process is not subject to LAFCo purview. Agencies located within high- or medium-priority basins must adopt groundwater sustainability plans within 5–7 years. The time frame for basins determined by DWR to be in a condition of “critical overdraft” is 5 years (i.e., by 2020). Local agencies will have 20 years to fully implement groundwater sustainability plans after the plans have been adopted. Intervention by the SWRCB would occur if a groundwater sustainability agency is not formed by the local agencies, and/or if a groundwater sustainability plan is not adopted or implemented.

The SGMA requires local agencies to develop and implement groundwater sustainability plans in high and medium priority groundwater basins throughout California. In 2014, DWR designated the South American groundwater subbasin as high priority (DWR 2014). However, the South American Subbasin is not included on DWR’s list of critically overdrafted basins (DWR 2016b). Local agencies must form groundwater sustainability agencies by 2017, then agencies in critically overdrafted basins must develop plans by 2020, while agencies in all other high and medium priority basins must prepare plans by 2022. Designation of a groundwater sustainability agency is not required until 2017, and groundwater sustainability plans are not required until 2020 at the earliest.

~~As of May 4, 2016, two Resource Conservation Districts have submitted notice to be the groundwater sustainability agency for the South American Subbasin (DWR 2016d). The Sacramento Central Groundwater Authority is moving forward with SGMA compliance and submitted a notice of intent on July 21, 2016, to~~

become a Groundwater Sustainability Agency for its area within the South American Subbasin and exclusive status was granted for the majority of that area by DWR (Sacramento Central Groundwater Authority 2016).

The northern portions of the Omochumne-Hartnell Water District and the Sloughhouse Resource Conservation District overlap areas along the southern boundary of the South American Subbasin (DWR 2016c). Both water districts have submitted notices to be groundwater sustainability agencies. Resolution of overlap areas will occur in parallel with review of the South American Subbasin Alternative Submittal that is discussed further below.

Levee Flood Protection Zones

Water Code Section 9130 was passed in 2007 and required DWR to prepare Levee Flood Protection Zone maps that identified the areas where flood levels would be more than three feet deep if a levee were to fail. Several sources of information were used by DWR for these maps, including FEMA floodplain maps, FEMA Q3 data, USACE's 2002 Sacramento and San Joaquin River Basins Comprehensive Study, and local project-levee studies. DWR is updating the Levee Flood Protection Zone maps as needed based on new topography, hydrology, hydraulic models, and floodplain maps (DWR 2011).

The SOIA Area is not located within the Sacramento River Basin Levee Flood Protection Zone map (DWR 2011).

LOCAL

Sacramento LAFCo Policies, Standards, and Procedures

Sacramento LAFCo has developed standards and guidelines in its Plans, Policies, and Procedures Manual that aide in the implementation of the CKH Act. The following Sacramento LAFCo policies, standards, and procedures relate to hydrology and water quality.

Chapter IV, General Standard

- ▶ **Section F.** Application of the California Environmental Quality Act to Changes of Organization or Reorganization and Spheres of Influence.
 - **Standard F.4.** In preparing an Initial Study for the project subject to LAFCo review, the LAFCo will generally consider the project to have the potential to significantly affect the environment if one or more of the following situations exists:
 - If buildout of the project may result in the capacity of any public service or facility being exceeded or substantially affected. For the purposes of this provision, public facilities or services include, but are not limited to: sewage disposal, water service, flood control facilities, drainage facilities, law enforcement, fire protection, school, parks, libraries, gas and electric service, and solid waste disposal. A public service or facility shall be considered “substantially affected” if the additional demand generated by the project would result in the facility or service exceeding 110 percent of its design capacity, or 120 percent of the available capacity.
 - If the project has substantial growth-inducing potential because it would result in:

- providing or requiring flood control or other public facility which will protect the public safety so as to permit new development in an area substantially larger than the proposed project;
- providing any other public service or facility to a substantial area which could not grow without such service; and
- encouraging or fostering growth in a substantial area.

City of Elk Grove

The City of Elk Grove General Plan establishes goals and policies to guide both present and future development within the City's jurisdiction. The General Plan contains the following policies related directly or indirectly to hydrology and water quality.

- ▶ **Policy CAQ-1:** Reduce the amount of water used by residential and non-residential uses by encouraging water conservation.
 - **CAQ-1-Action 1:** Implement the City's Water Conservation Ordinance.
 - **CAQ-1-Action 2:** Actively encourage water conservation by both agricultural and urban water users.
 - **CAQ-1-Action 3:** Work with urban and agricultural water purveyors to establish long range conservation plans which set specific conservation objectives and utilize, to the extent possible, a common planning horizon, plan framework and estimating/ forecasting procedures.
 - **CAQ-1-Action 4:** Promote the use of drought-tolerant vegetation to minimize water consumption by providing information to developers and designers.
- ▶ **Policy CAQ-5:** Roads and structures shall be designed, built, and landscaped so as to minimize erosion during and after construction.
- ▶ **Policy CAQ-12:** The City shall seek to ensure that the quality of groundwater and surface water is protected to the extent possible.
 - **CAQ-12-Action 2:** Implement the City's NPDES permit on all public and private development projects and activities.
- ▶ **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-14:** The city shall seek to minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and use onsite infiltration of runoff in areas with appropriate soils where the infiltration of storm water would not pose a potential threat to groundwater quality.
- ▶ **Policy CAQ-16:** Future land uses that are anticipated to utilize hazardous materials or waste shall be required to provide adequate containment facilities to ensure that surface water and groundwater resources are

protected from accidental releases. This shall include double containment, levees to contain spills, and monitoring wells for underground storage tanks, as required by local, state and federal standards.

- ▶ **Policy CAQ-17:** The City recognizes the value of naturally vegetated stream corridors, commensurate with flood control and public acceptance, to assist in removal of pollutants, provide native and endangered species habitat and provide community amenities.
- ▶ **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-19:** Encourage the retention of natural stream corridors, and the creation of natural stream channels where improvements to drainage capacity are required.
 - **CAQ-19-Action 1:** Re-vegetation using native plant species shall be encouraged; use of nonnative species shall be discouraged. Use of invasive species shall be prohibited.
 - **CAQ-19-Action 2:** The City shall permit stream channel realignment only:
 - When necessary to eliminate flood hazards, after alternatives to provide flood capacity while protecting the natural alignment have been shown to be infeasible; or
 - To protect and preserve natural features and vegetation which would otherwise be removed; or
 - If the existing channel has been significantly disrupted by agricultural improvements or other man-made changes.
 - **CAQ-19-Action 3:** The City shall require, to the maximum extent practical, retention of topographic diversity and variation when channels are realigned or modified, including:
 - “Self-sustaining” meander characteristics,
 - Berms,
 - Naturalized side slope, and
 - Varied channel bottom elevation, consistent with the characteristics of the watershed, public safety, and other site-specific considerations.
 - **CAQ-19-Action 4:** Where existing streams support riparian vegetation, evaluate options for constructing secondary flood control channels or other facilities for flood control and water quality purposes.
 - **CAQ-19-Action 5:** Channel lowering of existing natural streams shall occur only after consideration of alternatives (including surface drainage systems which do not require channel lowering) and only when it is necessary to accommodate the gravity drainage of storm runoff and/or accommodate floodflows under existing bridge structures.

- **CAQ-19-Action 6:** All storm drainage improvements on natural streams shall be designed where feasible to maintain water flows necessary to protect and enhance existing fish habitat, native riparian vegetation, water quality, and/or ground water recharge.
 - **CAQ-19-Action 7:** Improvements in watercourses shall be designed for low maintenance, and to accommodate peak flows with vegetation (including mitigation plantings) in the channel. Channel modifications shall retain marsh and riparian vegetation whenever possible.
 - **CO-19-Action 8:** Development design shall maximize the total floodplain frontage that is open to public view. Development adjacent to stream corridors shall be encouraged to provide a public street paralleling at least one side of the corridor with vertical curbs, gutters, foot path, street lighting, and post and cable barriers to prevent vehicular entry.
 - **CAQ-19-Action 9:** Trails along stream corridors shall be located to minimize wildlife impacts and shall be restricted to non-motorized traffic.
 - **CAQ-19-Action 10:** Except where approved by the City as part of the development of a public or private development project, no grading, clearing, tree cutting, debris disposal or any other similar action shall be allowed in stream corridors except for normal channel maintenance.
- ▶ **Policy SA-12:** The City opposes the construction of flood control facilities that would alter or reduce flows in the Cosumnes River and supports retention of the Cosumnes River floodplain in non-urban uses consistent with location in an area subject to flooding.
 - ▶ **Policy SA-13:** The City shall require that all new projects not result in new or increased flooding impacts on adjoining parcels on upstream and downstream areas.
 - ▶ **Policy SA-14:** The City shall give priority to the designation of appropriate land uses in areas subject to flooding to reduce risks to life and property. Construction of new flood control projects shall have a lower priority, unless land use controls (such as limiting new development in flood-prone areas) is not sufficient to acceptable levels.
 - ▶ **Policy SA-15:** Development shall not be permitted on land subject to flooding during a 100-year event, based on the most recent floodplain mapping prepared by the Federal Emergency Management Agency (FEMA) or updated mapping acceptable to the City of Elk Grove. Potential development in areas subject to flooding may be clustered onto portions of a site which are not subject to flooding, consistent with other policies of this General Plan.
 - ▶ **Policy SA-16:** A buildable area outside the 100-year floodplain must be present on every residential lot sufficient to accommodate a residence and associated structures. Fill may be placed to create a buildable area only if approved by the City and in accordance with all other applicable policies and regulations. The use of fill in the 100-year floodplain to create buildable area is strongly discouraged, and shall be subject to review to determine potential impacts on wildlife, habitat, and flooding on other parcels.
 - ▶ **Policy SA-17:** Vehicular access to the buildable area of all parcels must be at or above the 10-year flood elevation.

- ▶ **Policy SA-18:** Creation of lots whose access will be inundated by flows resulting from a 10-year or greater storm shall not be allowed. Bridges or similar structures may be used to provide access over creeks or inundated areas, subject to applicable local, state, and federal regulations.
- ▶ **Policy SA-19:** Discourage the number of crossings of natural creeks in order to reduce potential flooding and access problems.
 - **SA-19-Action 1:** Lots or parcels which will contain two or more buildable areas on both sides of a creek or floodplain shall be discouraged.
- ▶ **Policy SA-20:** Parcels should not be created on which the presence of easements, floodplain, marsh or riparian habitat, or other features would leave insufficient land to build and operate structures. This policy shall not apply to open space lots specifically created for dedication to the City or another appropriate party for habitat protection, flood control, drainage, or wetland maintenance.
- ▶ **Policy SA-22:** New and modified bridge structures shall not cause an increase in water surface elevations of the 100-year floodplain exceeding one foot, unless analysis clearly indicates that the physical and/or economic use of upstream property will not be adversely affected.
- ▶ **Policy SA-23:** The City shall require all new urban development projects to incorporate runoff control measures to minimize peak flows of runoff and/or assist in financing or otherwise implementing Comprehensive Drainage Plans.
 - **SA-23-Action 1:** As part of the review of development projects, ensure that runoff control measures are planned and provided.
- ▶ **Policy SA-24:** Drainage facilities should be properly maintained to ensure their proper operation during storms.
- ▶ **Policy PF-6:** The City shall seek to protect the quality and quantity of groundwater resources, including those which serve households and businesses which rely on private wells.

Central Sacramento County Groundwater Management Plan

The Sacramento Central Groundwater Authority implements the *Central Sacramento County Groundwater Management Plan* (February 2006). The Central Sacramento County ~~Groundwater Management Plan (CSCGMP)~~ Central Sacramento County GMP represents an established framework for maintaining sustainable groundwater resources for the various users overlying the basin in Sacramento County between the American and Cosumnes Rivers (SCGA 2006). It includes specific goals, objectives, and an action plan to provide a “road map” for the governance body as the steps necessary to manage the basin are taken in coordination with various stakeholders. The ~~CSCGMP~~ Central Sacramento County GMP is intended to be adaptive to changing conditions within the groundwater basin and is updated and refined as needed to reflect progress made in achieving the ~~CSCGMP’s~~ Central Sacramento County GMP’s objectives. A goal of the ~~CSCGMP~~ Central Sacramento County GMP is to ensure a viable groundwater resource for beneficial uses, including water for purveyors, agricultural, agricultural residential, industrial, and municipal supplies while maintaining and enhancing flows in the Cosumnes River. It is used as a tool to help ensure a long-term reliable water supply for rural domestic, agricultural, urban,

business/industrial, environmental, and development uses in the region. The California Water Code requires that a groundwater management plan contain numerous technical provisions, which are briefly summarized as follows:

- ▶ An inventory of water supplies and a description of water uses within a given region. This information is summarized in a water balance showing overall water demands and available water supplies.
- ▶ Monitoring and management programs that ensure the Basin Management Objectives are being met.
- ▶ Description of stakeholder involvement and public information plan and programs for the groundwater basin.

The Central Sacramento County GMP includes the following Basin Management Objectives to help achieve groundwater basin goals:

- ▶ maintain the regional long-term average groundwater extraction rate at or below the sustainable yield of 273,000 afy established by the Water Forum,
- ▶ adhere to specific minimum groundwater elevations with a focus on the deepest point of the cone of depression,
- ▶ protect against any potential inelastic land surface subsidence,
- ▶ protect against any adverse impacts to surface water flows, and
- ▶ develop specific water quality objectives for several constituents of concern.

Sacramento Central Groundwater Authority Alternative Submittal

This process is not subject to LAFCo purview. SGMA established a process for local agencies to develop an Alternative in lieu of a groundwater sustainability plan, as long as the Alternative satisfies the objectives of SGMA via a similar level of groundwater management through the agencies' existing groundwater management plan, and/or by providing sufficient factual evidence demonstrating the subbasin has operated within its locally established sustainable yield for at least 10 years. According to the groundwater sustainability plan regulations, Alternatives will be evaluated by the same criteria that will be used to assess groundwater sustainability plans.

The Sacramento Central Groundwater Authority prepared and submitted a final draft of the Alternative Submittal to DWR on December 14, 2016. The Alternative Submittal provides the same level of detail as required in a groundwater sustainability plan and shows groundwater management would continue to occur consistent with the existing Central Sacramento County GMP. The Alternative Submittal demonstrates subbasin operations from 2005 to 2015 did not exceed the sustainable yield conditions set forth by the Water Forum Agreement of 273,000 afy (Table 3.10-2). If approved, the 273,000 afy sustainable yield set forth by the Water Forum Agreement will be incorporated into the Alternative Submittal, and this total will be the base year for measuring the long-term sustainability of groundwater in the subbasin. The Sacramento Central Groundwater Authority proposed that its Alternative Submittal be adopted in-lieu of a groundwater sustainability plan. DWR's timetable for approval and adoption of the Alternative Submittal is not known at this time.

City of Elk Grove Storm Drainage Master Plan

On December 14, 2011, the City Council certified an EIR and adopted a Mitigation Monitoring and Reporting Program for the City's Storm Drainage Master Plan. The plan provides a variety of drainage concepts for upgrading the existing storm drainage and flood control collection system. Volume II of the plan evaluates the performance level of the existing facilities, identifies performance deficiencies, identifies potential impacts of future development on existing facilities, and identifies existing and new facilities upgrades to serve buildout conditions (City of Elk Grove 2012).

3.10.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

The proposed project consists of altering the City of Elk Grove Sphere of Influence (SOI), the Sacramento Area Sewer District (SASD) SOI, and the Sacramento Regional County Sanitation District (SRCSD) SOI to include the project area. The proposed project itself does not include any development or construction, only alteration to the SOI boundaries. Therefore, the proposed project itself would not degrade water quality, alter drainage or groundwater, create runoff, or expose people or structures to flooding. Thus, the proposed project would not result in any significant impacts based on the thresholds of significance. However, alteration of the SOI boundaries would allow consideration of future development under the purview of the City of Elk Grove. Therefore, impacts are evaluated assuming that the entire SOIA Area could potentially be subject to development, using the land use scenario developed for the purposes of analysis (see Chapter 2 of this EIR for more detail).

THRESHOLDS OF SIGNIFICANCE

The proposed SOIA could have a significant impact related to hydrology and water quality if it would:

- ▶ Violate any water quality standards or waste discharge requirements;
- ▶ Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a 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);
- ▶ 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;
- ▶ Otherwise substantially degrade water quality;

- ▶ Place housing within a 100-year or 200-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 or 200-year flood hazard area structures which would impede or redirect flood flows;
- ▶ Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- ▶ Inundation by seiche, tsunami, or mudflow.

ISSUES NOT DISCUSSED FURTHER

- ▶ **Seiche, Tsunami, and Mudflow** – The SOIA Area is located in an area not subject to seiche or tsunami, and the area topography is relatively level and not subject to mudflow. Therefore these issues are not discussed further in this EIR.

IMPACT ANALYSIS

IMPACT 3.10-1 Degradation/violation of water quality standards. *Future development within the SOIA Area and installation of possible off-site infrastructure improvements could result in degraded water quality and an increase in stormwater or wastewater discharge. This impact is considered **potentially significant**.*

Storm drainage within this SOIA Area has historically been achieved as part of the various agricultural operations, flowing into agricultural ditches, which generally follow field boundaries. Though the project itself would not include any development or construction that would affect water quality or waste discharge requirements, approval of the SOIA would potentially allow for the SOIA Area to be developed, along with any off-site infrastructure improvements needed to support the development. As part of a future development, a stormwater drainage system would be required to collect and convey stormwater runoff from developed areas. Future stormwater drainage systems could include open channels and multi-use stormwater quality/detention facilities. The potential growth and urbanization of the SOIA Area and potential off-site infrastructure improvement areas could alter storm drainage pathways and add potential contaminant sources (i.e., oils, grease, etc.), which could have an impact on water quality. As noted previously, there is a likelihood of the presence of pesticides and herbicides in the soil, and therefore could be transported by the runoff from the SOIA Area and potential off-site infrastructure improvement areas.

If the SOIA Area and potential off-site infrastructure improvement areas are developed in the future, pollutants within the stormwater runoff would likely include hydrocarbons, grease, oil, and heavy metals from automobiles, detergents, coliform bacteria, and trash. Infiltration of stormwater runoff into the soil would also likely decrease due to an increase in impermeable surfaces. Stormwater volume would likely increase.

If the SOIA Area is developed in the future, it is likely the existing agricultural ditches would be replaced by other stormwater infrastructure. According to the City of Elk Grove’s Storm Drainage Master Plan (2011), low impact development (LID) must be incorporated into future development projects in the City, based on the requirements of the City’s NPDES stormwater permit. LID emphasizes the use of on-site natural features integrated with engineered hydrologic controls distributed throughout a watershed that promote infiltration, filtration, storage, and evaporation of runoff close to the source in order to manage stormwater (City of Elk Grove 2011).

The City of Elk Grove’s Storm Drainage Master Plan recommends that all runoff from developed areas within Drainage Shed C should be directed into detention basins: “The detention basins, in conjunction with LID, will provide all the necessary stormwater quality treatment and flood flow mitigation for the developing areas within the watershed” (City of Elk Grove 2011, page 15-11).

The Storm Drainage Master Plan also states that the proposed mitigation measures for Shed C will effectively mitigate for the potential hydromodification impacts in the watershed and that modeling results indicate that the proposed drainage system including LID, detention, and channel improvements will adequately mitigate for potential flood flow increases downstream of the City. The modeling also shows that peak flood flows for the 10-year and 100-year storms are predicted to be reduced slightly (Table 15-14) (City of Elk Grove 2011).

Any future development would be required to submit stormwater drainage designs, including a comprehensive drainage study, consistent with the Storm Drainage Master Plan to the City of Elk Grove for approval (City of Elk Grove 2007a).

In addition, any future development within SOIA Area would have to adhere to City of Elk Grove NDPEs permit requirements and City of Elk Grove Municipal Code requirements related to Stormwater Management and Discharge Control (Chapter 15.12). According to the City of Elk Grove’s Improvement Standards Section 11 Stormwater Quality Protection, “developers meeting the project area disturbance threshold of one (1) acre or more of disturbed area shall obtain coverage under the SWRCB General Permit for Storm Water Discharges Associated with Construction Activity (Construction General Permit), prior to commencing construction activities...Projects smaller than one (1) acre of disturbed soil area shall prepare a Water Pollution Control Plan (WPCP)” (City of Elk Grove 2007b). Permit requirements include development and implementation of a SWPPP prior to disturbing a site. The SWPPP has to include a site-specific listing of the potential sources of stormwater pollution, anticipated stormwater discharge locations, BMPs for construction waste handling and disposal, and non-stormwater management, among other items (City of Elk Grove 2007b – Section 11).

Despite city requirements regarding stormwater, due to the potential for pesticides and herbicides to be present in the soil, the impact to water quality from these chemicals being transported in stormwater is considered **potentially significant**.

Mitigation Measures

Mitigation Measure 3.10-1: Implement Mitigation Measure 3.9-2

Significance after Mitigation

Implementation of Mitigation Measure 3.10-1 would reduce impacts associated with the potential presence of pesticides and herbicides at the site, by requiring review, testing, and remediation of potential hazardous materials in accordance with all local, State, and federal regulations. In addition, compliance with the City’s requirements related to water quality and wastewater discharge, would ensure stormwater would be captured and treated as necessary according to the City’s Storm Drainage Master Plan, NDPEs permit, and Municipal Code requirements. The impact is **less than significant with mitigation**.

IMPACT 3.10-2 Depletion of groundwater supplies. Future development within the SOIA Area could require additional drinking water that may be supplied via groundwater, resulting in a depletion of groundwater supplies. This impact is considered *significant*.

The SOIA Area is considered a poor groundwater recharge area. With detention basin and LID requirements described in Impact 3.10-1, above, and within the City’s Storm Drainage Master Plan, development (and related increase in impervious surfaces) would not interfere substantially with groundwater recharge (County of Sacramento Not Dated).

Future development within the SOIA Area would increase demands for water supply. The SOIA Area is adjacent to the southwestern boundary of Sacramento County Water Agency’s (SCWA’s) Zone 40. Therefore, it is most likely that water service would be provided by SCWA (Exhibit 3.10-1). SCWA would need to annex the SOIA Area into its service area. The SOIA Area is not within SCWA’s Zone 40 2030 Study Area and water supply demands to the SOIA Area were not accounted for in the Zone 41 Urban Water Management Plan (UWMP) or Zone 40 Water Supply Master Plan. The SCWA Zone 40 Water Supply Master Plan has developed water supply demand factors for the 2030 Study Area based on acreages of land uses. Based on California crop information and estimated amount of water applied to each crop type, the SOIA Area is estimate to use over 597 million gallons of water a year under current conditions (Table 3.10-1).

SCWA’s Zone 40 water-demand factors were applied to the acreage for each land use designation that generates water use within the SOIA. As shown on Table 3.10-2 3, the estimated water supply demand based on build-out of the conceptual land use scenario has been conservatively estimated as 3,233 afy.¹ If a recycled water program becomes available in the future, recycled water could be used for parks, landscape corridors, schools and open space areas.

Land Use Category	Unit Water Demand Factors (af/ac/yr)	Land Use (acres)	Water Demand (afy)
Single-Family	2.89	430	1,243
Multifamily—High Density	4.12	8790	358371
Commercial ¹	2.75	373380	1,0261,045
Industrial	2.71	125130	339352
Public Recreation ²	3.46	141140	488484
Subtotal	--	1,156	3,4543,495
Water System Losses (7.5%)	--	--	259262
Total Demand	--	--	3,1953,233

Notes: af/ac/yr = acre-feet per acre per year; afy = acre-feet per year.
¹ Future commercial and office development is included in the Commercial land use category.
² Future schools and parks/open space are included in the Public Recreation land use category.
Source: SCWA 2005:2-5

The majority of SCWA’s water supply comes from groundwater wells (75 percent), with remaining supply met by surface water supplies from the American and Sacramento Rivers. SCWA pumps groundwater from the South

¹ This water supply demand does not reflect 2016 CALGreen Code (Title 24, Part 11 of the California Code of Regulations) requirements to reduce indoor demand for potable water by 20 percent and to reduce landscape water usage by 50 percent or water conservation measures that may be implemented by future development.

American Sub-basin of the Sacramento Valley Groundwater Basin. Therefore, it is likely that if SCWA becomes the water supplier for the project area, a portion to all of the water supplied to the development could come from groundwater. SCWA anticipates that, at buildout of its service area, and assuming that appropriative water and CVP contract water continue to be available, surface water will account for approximately 70 percent of water supplies during average and wet years and account for approximately 30 percent of water supplies in the driest years, thereby resulting in a long-term average of approximately 60 percent of water demands being met by surface water supplies (SCWA 2017).

The Zone 41 UWMP indicates that water supplies and demands within SCWA Zone 40 would be the same during normal, single-dry, and multiple-dry years; however, the year-to-year mix of surface and groundwater would be adjusted, as necessary, to meet the demands as part of its conjunctive use water supply program. As shown in Table 3.15-2, SCWA would have surface water and groundwater supplies that exceed demands within Zone 40 from 2010 to 2035 in all water years.

Extensive groundwater pumping in the region has resulted in groundwater depressions on either side of the Cosumnes River, which has hydraulically separated the river from the groundwater basin. In addition, groundwater pumping has dewatered important wetlands and habitat. Long term groundwater pumping has resulted in groundwater levels up to 60 feet lower than surrounding areas. The Sacramento Central Groundwater Authority has found that over the 10-year period (2005–2015), the Central Basin continues to recover at its deepest points and management is now focused on working with outside agencies to keep water from leaving the basin, and improving basin conditions where and when possible, in accordance with the Central Sacramento County GMP (Sacramento Central Groundwater Authority 2016).

Further, groundwater storage in the recharge area underlying Elk Grove and surrounding areas is continuing to increase as a result of increased use of surface water in the Central Basin, the fallowing of previously irrigated agricultural lands transitioning into new urban development, recharge from the construction of large conjunctive use and surface water infrastructure facilities, increased use of recycled water, and water conservation. The increase in storage in this portion of the subbasin has filled the long-term cone of depression and has eroded the ridge of higher groundwater separating it from the Cosumnes Subbasin (Sacramento Central Groundwater Authority 2016).

As a signatory to the Water Forum Agreement, SCWA is committed to adhering to the long-term average sustainable yield of the Central Basin (273,000 acre-feet) (SCWA 2011). As shown in Table 3.10-2, groundwater extraction has been within the Water Forum Agreement’s sustainable yield from 2005 to 2015. It is currently not known if SCWA’s existing water supplies would be adequate to meet the water demands of future development but SCWA has indicated that it is likely additional surface water and groundwater supplies will be procured to meet the water supply demands of the SOIA Area (SCWA 2017) (see Impact 3.15-1 in Section 3.15, “Utilities and Services Systems,” for further discussion). It is unknown what effect additional groundwater pumping, if required, would have on the Central Basin. When the Water Forum stakeholders negotiated this extraction volume for the basin, it was anticipated that this volume would result in a further decline in groundwater levels (approximately 50 feet in the deepest part of the cone of depression as measured in 1990). It was expected that such a decline would affect some existing domestic and agricultural wells. An update of the impact analysis from the Water Forum Agreement was recently completed. This update is based on groundwater model improvements and the Zone 40 Water Supply Master Plan. Results of this analysis show that the decline is not as severe as originally expected (Sacramento Regional County Sanitation District 2014). However, given the likelihood that at

~~least a portion of the water supply that may be provided to future development at the site could come from already greatly depleted groundwater. Therefore, the impact is considered significant.~~

Mitigation Measures

~~Mitigation Measure 3.10-2a: Implement Mitigation Measure 3.15-1~~ ~~Mitigation Measure 3.10-2b: Assure Consistency with the Central Basin Groundwater Management Plan~~

~~At the time of submittal of any application to annex territory within the SOIA Area, the City of Elk Grove shall require discretionary project to demonstrate consistency with the Central Basin Groundwater Management Plan.~~

Significance after Mitigation

As described in Mitigation Measure 3.10-2, prior to approval of any application to annex territory within the SOIA Area, the City of Elk Grove shall prepare a Plan for Services which shall demonstrate that SCWA water supplies are adequate to serve existing and planned development under normal, single dry, and multiple dry years as required by law. The Plan for Services required by Mitigation Measure 3.10-2 (also known as Mitigation Measure 3.15-1) shall demonstrate that the SCWA is a signatory to the Water Forum Agreement, that groundwater management would occur consistent with the Central Sacramento County Groundwater Management Plan, and that groundwater will be provided in a manner that ensures no overdraft will occur. The Plan for Services shall depict the locations and appropriate sizes of all on-site water system facilities to accommodate the amount of development identified for the annexation territory, demonstrate SCWA has annexed the territory into its service area, and demonstrate adequate SCWA off-site water facilities are available to accommodate the amount of development identified in the annexation territory or that fair share funding will be provided for the construction of new or expansion and/or improvement of existing off-site water system facilities.

~~As described in Mitigation Measure 3.10-2b, Elk Grove is required to include an assessment of existing and proposed groundwater uses and the City of Elk Grove is required to incorporate this data as necessary into monitoring and management programs that ensure the Central Basin Groundwater Management Plan Basin Management Objectives designed to protect and enhance the groundwater basin continue to be met. To ensure a sustainable resource, the plan may need to consider limitations on development or pursuit of additional surface water supplies, increased use of recycled water, and implementation of water conservation elements to ensure consistency with the Central Basin Groundwater Management Plan.~~

Implementation of Mitigation Measure 3.10-2a ~~and Mitigation Measure 3.10-2b~~ would reduce significant impacts associated with groundwater use because the City of Elk Grove would demonstrate adequate SCWA water supplies to support the amount of development identified in the annexation territory. However, given the uncertainty of future potential land uses, LAFCo finds that it is not now possible to determine the effectiveness of mitigation with certainty. LAFCo would condition future annexation on compliance with Mitigation Measure 3.10-2a ~~and Mitigation Measure 3.10-2b~~. However, neither LAFCo nor the City of Elk Grove would have control over SCWA's future water supply planning. There is no additional feasible mitigation. The impact is **significant and unavoidable**.

IMPACT 3.10-3 Erosion, siltation, downstream flooding, or increased stormwater runoff volumes. *Future development within the SOIA Area and potential installation of off-site infrastructure improvements could alter drainage patterns, increase stormwater runoff, and increase susceptibility to downstream flooding and/or erosion that is due to increased volumes or peak flows. This impact is considered **potentially significant**.*

Future development within the SOIA Area and potential installation of off-site infrastructure improvements could alter drainage patterns, increase stormwater runoff, and increase susceptibility to downstream flooding and/or erosion that is due to increased volumes or peak flows.

Within the SOIA Area, runoff is currently directed into a series of highly maintained agricultural ditches that generally follow field boundaries. As mentioned above, the SOIA Area is located in Drainage Shed C as identified by the Storm Drainage Master Plan of the City of Elk Grove (Elk Grove 2012). Future development would likely result in existing agricultural ditches being replaced by other stormwater infrastructure thereby altering the drainage patterns at the site. These modifications would be required to be consistent with City of Elk Grove's Storm Drainage Master Plan requirements, as described under Impact 3.10-1, above.

As stated in Impact 3.10-1, future development and potential off-site infrastructure installation would likely decrease infiltration of stormwater runoff into the soil due to an increase in impervious surfaces. In addition, increased volumes of peak flows could result in new or increased flooding upstream and downstream on adjoining parcels. Therefore, this impact is considered **potentially significant**.

Mitigation Measures

Mitigation Measure 3.10-3: Prepare a Drainage Master Plan

At the time of submittal of any application to annex territory within the SOIA Area, the City of Elk Grove shall require ~~all discretionary projects~~ applicants to plan for drainage through preparation of a to prepare a Drainage Master Plan or update to an areawide or city drainage master plan. The Drainage Master Plan shall disclose where stormwater is designed to be released into waterway crossings at State Route 99 facilities. The Drainage Master Plan shall include a review, analysis, and disclosure of locations where channel capacity inadequacies lie; identify the capacities of bridges crossing State Route 99; and identify the need for additional bridge capacity, if necessary. City shall develop measures to minimize, avoid, reduce, or compensate for potential impacts to roadway facilities in consultation with the California Department of Transportation. The City shall provide proof of consultation with the California Department of Transportation to LAFCo. In addition, the Master Drainage Plan shall identify areas of potential impacts due to encroachments on channels, measures to provide improvements or maintenance where development in the SOIA Area would affect channels.

The Drainage Master Plan that demonstrates attainment of pre-project stormwater runoff rates and describe the volume reduction measures and treatment controls used to reach attainment. The Master Drainage Plan shall identify all expected flows from the project area and the location, size, and type of facilities used to retain and treat the runoff volumes and peak flows to meet pre-project conditions. The Master Drainage Plan shall also include the geotechnical report verifying groundwater elevation for the regional basins.

Significance after Mitigation

Implementation of Mitigation Measure 3.10-3 would require future project applicant to prepare and submit a drainage plan to the City of Elk Grove that demonstrates that off-site upstream runoff would be appropriately conveyed, that project-related on- and off-site runoff would be appropriately contained in detention basins or other drainage features to reduce flooding, and that proposed improvements meet requirements of City and County policies described above. Therefore, this impact is considered **less than significant**.

IMPACT 3.10-4 Structures or housing within flood hazard area. *Future development could place housing or structures within a flood hazard zone and could impede or redirect flood flows. This impact is considered less than significant.*

Although the SOIA Area is located outside of regional (Cosumnes River) and local 100-year floodplains (Exhibit 3.10-1), the SOIA Area may be partially within the 200-year floodplain for the Cosumnes River. As noted in the City's 200-year floodplain map, the SOIA Area is outside the limit of the 200-year floodplain model and therefore the 200-year floodplain area is undetermined within the project area (City of Elk Grove 2016a). However, based on the City's map, it is likely the eastern portion of the SOIA Area is within the 200-year floodplain.

Based on SB 5, which required the City of Elk Grove to amend its General Plan and Zoning regulations to address the 200-year floodplain, the City of Elk Grove amended Chapter 23.42.040 of the City's Municipal Code, Flood Combining District. Development in the 200-year floodplain is not allowed unless certain findings are made. Development in areas with flood depths less than three feet is exempt from the finding requirement, as allowed under SB 5 (City of Elk Grove 2016b). Therefore, any future development in the SOIA Area that is determined to be within the 200-year floodplain would have to meet City requirements to protect residents and development against flood damage. Thus, this impact is considered **less than significant**.

Mitigation Measures

No mitigation measures are required.

IMPACT 3.10-5 Loss, injury, or death from flooding. *Future development could expose people or structures to a risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. This impact is considered less than significant.*

Although the project does not propose development or any land use change, future development could occur as a result of the SOIA. The nearest dams are Folsom Dam and Sly Park Dam. The SOIA Area is located outside of the Folsom Dam inundation zone and just west of the inundation zone for the Sly Park Dam. There are no levees within or adjacent to the SOIA Area. Therefore, any future development within the SOIA Area would not expose people or structures to a risk of loss, injury or death from flooding as a result of the failure of a levee or dam.

As described in Impact 3.10-4, the SOIA Area is located outside the 100-year floodplain but may be partially within the 200-year floodplain, thereby potentially exposing people or structures to flooding. However, as described above, any future development in the SOIA Area that is within the 200-year floodplain would have to meet City requirements to protect residents and development against flood damage. Thus, this impact is considered **less than significant**.

Mitigation Measures

No mitigation measures are required.