This section discusses and analyzes the surface hydrology, groundwater, and water quality characteristics of the proposed Project. The information provided in this section is based on field review, a Preliminary Drainage Report prepared for the Project, and relevant documents, including the City of Elk Grove General Plan Conservation and Air Quality Element.

4.7.1 EXISTING SETTING

REGIONAL HYDROLOGY

Surface Water

The City of Elk Grove is located in the southern portion of Sacramento County in the Sacramento Valley. Distinctive geographic features in the area include the Stone Lakes National Wildlife Refuge, the Cosumnes River, Sacramento River and associated tributaries which include Deer Creek, Morrison Creek, and Laguna Creek.

The Sutter Elk Grove Master Plan Project is located in the southern portion of the Sacramento River Hydrologic Region. The Sacramento River Hydrologic Region covers approximately 17.4 million acres (27,200 square miles) (DWR, 1998). 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 (**Figure 4.7-1**). 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. Another significant feature is the Sacramento River, which is the longest river system in the State of California with major tributaries the Pit, Feather, Yuba, Bear and American rivers.

The City is also located in the Morrison Creek Stream group drainage basin, a 192-square mile watershed tributary to the Sacramento River Basin. The Morrison Creek Stream Group drainage basin consists of Elder, Elk Grove, Laguna (and tributaries), Morrison, Strawberry, and Whitehouse Creeks. All creeks in the vicinity of the City drain into the Morrison Creek Stream Group, then eventually into the Sacramento River. Runoff from precipitation and snowmelt from the Sierra Nevada mountains are the main sources of surface water for the City of Elk Grove.

Land use in the Morrison Creek watershed is a mix of rural and urban uses including grazing, agricultural, low- to high-density residential, industrial, and commercial. The portion of the watershed east of Hedge Road and Waterman Road is predominantly rural. The portion of the watershed west of these roads is predominantly urban. Morrison Creek flows southwestward from near the intersection of White Rock Road and Grant Line Road to Stone Lake west of Interstate 5 (TMDL Report, 2004, page 5).

Limited stream flow data exists for Morrison Creek and two of its tributaries, Elder Creek and Elk Grove Creek. Generally, these creeks are perennial with some channelized sections. They experience flashy flow conditions during storm events with much lower flow conditions during dry weather. For example, flows measured in Morrison Creek (and in Florin Creek, a tributary to Elder Creek) increased by two orders of magnitude (ranging from 0.1 cubic feet per second to 54 cubic feet per second) during a two-day storm event monitored by the Regional Water Quality Control Board staff in February 2001 (TMDL Report, 2004, page 5).

Groundwater

The Project 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 (Bulletin 118, 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 (Bulletin 118, 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 sub-basin.

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, 2003). As surface water supplies have been so abundant in the Sacramento Valley, groundwater supply primarily supplements the surface water supply. Yet with changing environmental laws and requirements, this balance is shifting to a greater reliance on groundwater, and conjunctive use of both supplies is occurring to a greater extent throughout the Sacramento Valley, particularly in drought years. The Project is proposed to receive its water from the Sacramento County Water Agency (SCWA). SCWA obtains water from a combination of groundwater wells and treated surface water from the American River.

Two aquifer formations underlie the Elk Grove area. The first and shallower aquifer (Laguna Formation) extends 200 to 300 feet below ground level. The second and deeper aquifer (Mehrten Formation) separated from the shallower aquifer by a discontinuous clay layer, averages 1,600 feet thick. Extraction from the South Sacramento groundwater basin has formed a cone-of-depression in the groundwater table centered south of Elk Grove Boulevard between Interstate 5 and SR 99.

Local Hydrology and Drainage

The Project site is located in the central portion of Elk Grove on the west side of State Route (SR) 99. The Project site spans a total of 40.89 acres, and is located adjacent to Elk Grove Creek. Within the Project site there may be several channels that convey water to this creek.

Two existing medical office buildings (MOB I and MOB II) with parking and landscaping are located on nine acres on the northern section of the site. Storm water drainage is collected from a series of catch basins set within the parking lot asphalt surface, and is conveyed to public storm water facilities under Big Horn Boulevard and Laguna Boulevard. At the eastern edge of the parking lot, two drainage ditches, each approximately 350 feet long, 30 feet wide, and two

feet deep, provide overland release of large storm water flows. These ditches flow directly to Elk Grove Creek.

The rest of the property is undeveloped, with grassy vegetation. The existing topography of the site is generally flat. Elevations of the parking facilities for the existing MOB I and MOB II are between 30 and 34 feet. Elevations of the undeveloped land vary from 31 to 35 feet, with the majority of the site at a flat elevation averaging at 32.5 feet. The site slopes gradually to the east, towards Elk Grove Creek.

The property is bounded by Laguna Boulevard and large retail land uses to the north, Elk Grove Creek to the east, undeveloped portions of the Laguna Business Park to the east and south, an existing movie theatre and postal service facility to the southwest, and Big Horn Boulevard and office and residential land uses to the west.

Under the central section of the undeveloped portion of the property, an existing City-maintained storm drain conveys storm water from developed neighborhoods west of the Project site to Elk Grove Creek. The pipe runs under Big Horn Boulevard, turns east at Monetta Drive, and runs under a planned extension of Monetta Drive for 700 feet before turning north to Elk Grove Creek. The size of the storm drain varies from 30 inches under Big Horn Drive, to 42" under existing Monetta Drive, to 48" under the planned extension of Monetta Drive, to 54" at the outfall to Elk Grove Creek. According to the *City of Elk Grove Flood Control and Storm Drainage Master Plan Report*, dated November 2006, this storm drain has been designed to accommodate storm water runoff from its watershed when the storm drain is fully developed.

Water Quality

Water quality for all surface and ground waters for the Sacramento Valley is regulated under the jurisdiction of the Central Valley Regional Water Quality Control Board (CVRWQCB). Water quality standards for all waters in the region are discussed in the region's Basin Plan. The region's Basin Plan covers the entire area included in the Sacramento and San Joaquin River drainage basins. As stated above, the Sacramento River drainage basin covers 27,210 square miles and includes the entire area drained by the Sacramento River including the Project area.

Surface Water Quality

Currently, the Sacramento River portion from Red Bluff to the Delta, which includes the portion along the western border of the City of Elk Grove planning area, as well as Elder Creek, Elk Grove Creek, and Morrison Creek are listed water bodies on the Federal Clean Water Act Section 303(d) list due to specific pollutants present in these water bodies. All four water bodies contain the pollutant Diazinon, which is an insecticide used to control pests on crops. Elder Creek contains chlorpyrifos which is also an insecticide used to control pests on crops. The Sacramento River portion contains mercury and has an unknown toxicity. A Total Maximum Daily Load (TMDL) Report for the Pesticides Diazinon & Chlorpyrifos in Elder Creek, Elk Grove, and Morrison Creek was completed by the CVRWQCB in September 2004. In 2003, the CVRWQCB issued a Basin Plan Amendment establishing TMDLs and implementation plans for diazinon in the Sacramento and Feather Rivers.

A substantial decline in urban use of diazinon began in 2003. The U.S. Environmental Protection Agency phase-out of indoor urban diazinon uses was completed in December 2002. By August 2003, diazinon products for outdoor urban uses could no longer be sold and retailers were required to stop the sale of diazinon for outdoor non-agricultural uses after December 2004. The U.S. Environmental Protection Agency diazinon phase-out will eliminate sales of diazinon-

containing products for all indoor and outdoor urban diazinon uses, thus eventually eliminating the occurrence of urban sources of diazinon. The phase-out is expected to eventually result in the elimination of diazinon-related water quality impairments from urban application sources as people use up their diazinon- containing products (TMDL Report, 2004, page 38). According to the *Sacramento and Feather Rivers Basin Plan Amendment Final Staff Report*, there has been a dramatic reduction in total diazinon use over the most recent ten years reported. During the ten-year study period, diazinon use dropped from 140,000 pounds/year to 46,000 pounds per year, or a 67 percent reduction.

Unlike the U.S. Environmental Protection Agency-mandated urban-use diazinon phase-out, the U.S. EPA-mandated chlorpyrifos phase-out does not cancel all indoor and outdoor urban uses. Some indoor and outdoor urban chlorpyrifos uses are cancelled and several indoor and outdoor urban chlorpyrifos uses will be reduced (TMDL Report, 2004, page 39). Annual use of chlorpyrifos varied significantly from 1995 to 2001, yet the overall trend was towards less annual usage over this period. Beginning in 2001 and continuing through 2004, there was an increasing trend in total annual chlorpyrifos use. In addition, dormant season use, though minor compared to overall chlorpyrifos use, shows a general upward trend throughout the ten-year period (Basin Plan Amendment, 2007, page 27).

The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region, for the Sacramento and San Joaquin River basins, identified objectives to maintain pesticide levels in the water bodies, and not to exceed the Maximum Contaminant Levels set forth in the California Code of Regulations, Title 22, Division 4, Chapter 15.

The City of Elk Grove, along with the County of Sacramento and Cities of Citrus Heights, Folsom, Galt, and Sacramento, are co-permittees under the National Pollution Discharge Elimination System (NDPES) permit #CAS082597 covering the Sacramento County Area-Wide Municipal Separate Storm Sewer System (MS4). Under its NPDES permit, the City of Elk Grove has discharge and monitoring requirements for storm waters and a target pollutant reduction strategy for diazinon, chlorpyrifos, copper, lead, mercury, and coliform/pathogens.

Groundwater Quality

Groundwater contained in the water-bearing deposits underlying most of Sacramento County is of excellent mineral quality for irrigation and domestic uses (Bulletin 118, 2006). Within the sub-basin, calcium-magnesium and calcium-sodium bicarbonate water types are most common, according to the California Department of Water Resources.

The Laguna Formation aquifer is considered to be of good quality, with the exception of the presence of arsenic in some areas. The second and deeper aquifer (Mehrten Formation), separated from the shallower aquifer by a discontinuous clay layer, averages 1,600 feet thick and is considered to have poorer quality water. The deeper aquifer has higher concentrations of total dissolved solids (TDS), iron, and manganese. 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, 2004).

The long-term sustainable yield, or the safe yield, is generally described as the amount of pumping that does not result in damage to the groundwater aquifer. The determination of the safe yield of the groundwater system is dependent upon many factors. However, maintaining the yield of the aquifer system at lower levels may increase the yield of the system, and may have associated impacts. These impacts could include: increased pumping costs due to lower

groundwater levels, in-migration of lower-quality water from the deep aquifer system or adjacent areas, causing wells to become inoperative due to lower groundwater levels, land subsidence, and/or increased rate of spreading or localized groundwater contamination.

Precipitation and Climate

Precipitation is the principal source of runoff from the Project site. 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.

The Elk Grove area generally has warm, dry summers and mild winters. Temperatures of more than 100 degrees Fahrenheit occur nearly every year and temperatures can drop to near freezing during winter months.

Flooding

The Project site is located within FEMA floodplain Zone X, an area determined to be outside of the 100-year and 500-year flood plain as defined by FEMA Flood Insurance Rate Map, Community Panel Number 060262 0320 E, July 6, 1998. Zone X is a non-restrictive FEMA flood hazard designation. According to the Preliminary Drainage Report prepared for the Project (included in **Appendix F** of this EIR), the 100-year flood adjacent to the Sutter Elk Grove Medical Campus is contained within Elk Grove Creek. As mentioned above, the elevation of the majority of the site averages 32.5 feet above sea level and the site slopes gradually to the east, towards Elk Grove Creek. According to the Preliminary Drainage Report, which is based on the November 2006 *City of Elk Grove Flood Control and Storm Drainage Master Plan Report*, the water surface elevation of a 100-year flood event in Elk Grove Creek is 29.2 feet above sea level.

Dam Failure

The proposed Project site is located outside the Folsom Dam Failure Flood Area, which is the nearest dam inundation area in the vicinity of the City.

4.7.2 REGULATORY FRAMEWORK

FEDERAL

Clean Water Act

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

- Set requirements and standards pertaining to such discharges: subparagraph (e);

- Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites": subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);
- Deny or restrict the use of specified disposal sites if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas": subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual State or interstate compact administration of general permit programs: subparagraphs (g), (h), and (j);
- Withdraw approval of such State or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain Federal or State projects from regulation under this Section: subparagraph (r); and,
- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).
- Section 401 certification is required prior to final issuance of Section 404 permits from the U.S. Army Corps of Engineers.

The California State Water Resources Control Board and RWQCBs enforce State of California statutes that are equivalent to or more stringent than the Federal statutes. RWQCBs are responsible for establishing water quality standards and objectives that protect the beneficial uses of various waters including Morrison Creek, and other creeks in the Planning Area. In the Planning Area the RWQCB is responsible for protecting surface and groundwaters from both point and non-point sources of pollution. Water quality objectives for all of the water bodies within the Planning Area were established by the RWQCB and are listed in its Basin Plan.

STATE

Department of Water Resources

The Department of Water Resources' (DWR) major responsibilities include preparing and updating the California Water Plan to guide development and management of the State's water resources, planning, designing, constructing, operating, and maintaining the State Water Resources Development System, protecting and restoring the Sacramento-San Joaquin Delta, regulating dams, providing flood protection, assisting in emergency management to safeguard life and property, educating the public, and serving local water needs by providing technical assistance. In addition, the DWR cooperates with local agencies on water resources investigations; supports watershed and river restoration programs; encourages water conservation; explores conjunctive use of ground and surface water; facilitates voluntary water transfers; and, when needed, operates a State drought water bank.

Regional Water Quality Control Board Discharge Permits

Senate Bill 227, also known as the Porter-Cologne Water Quality Control Act (Porter-Cologne), governs the coordination and control of water quality in the state, and includes provisions relating to non-point source pollution. The State Water Resources Control Board (State Board) has the ultimate authority over State water rights and water quality policy. However, Porter-Cologne also establishes nine Regional Water Quality Control Boards (Regional Boards) to oversee water quality on a day-to-day basis at the local/regional level. The Central Valley Regional Water Quality Control Board (RWQCB) oversees the Elk Grove area.

Permits issued to control pollution (i.e. waste-discharge requirements and NPDES permits) must implement Basin Plan requirements (i.e. water quality standards), taking into consideration beneficial uses to be protected.

Since construction activities associated with the proposed Project would result in the disturbance of more than one acre, a National Pollutant Discharge Elimination System (NPDES) construction activities permit is required. The City of Elk Grove is a joint participant with Sacramento County's NPDES permit. The permit was renewed in December 2002, and allows for the City to discharge urban runoff from Municipal Separate Storm Sewer Systems (MS4s) in their municipal jurisdictions. The permit requires that the City impose water quality and watershed protection measures for all development projects. The NPDES also requires that every new construction project obtain a permit that implements the following measures:

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

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.

Sacramento County Water Agency (SCWA) Zone 40

The Sacramento County Water Agency created Zone 40 by Resolution No. 663 in May 1985. The purpose of Zone 40 was for the acquisition, construction, maintenance and operation of facilities for the production, conservation, transmittal, distribution and sale of ground or surface water or both for the present and future beneficial use of the lands or inhabitants within the zone. The boundaries and scope of Zone 40's activities were expanded in 1999 by Resolution WA-2331, and included the use of recycled water in conjunction with surface and groundwater. Refer to Section 4.10 (Public Services and Utilities) for more information regarding water supply to the City.

Zone 40 Water Supply Master Plan

The Zone 40 Water Supply Master Plan (Zone 40 Master Plan) was adopted February 8, 2005. The Zone 40 Master Plan provides a plan of water management alternatives to be implemented and revised as availability and feasibility of water supply sources change in the future. The Zone 40 Master Plan reflects recent trends in the pattern of water demand growth, treatment for water quality, expansion of the original service area, and the availability of potential sources of surface water supplies. The objectives of the Zone 40 Master Plan are:

- Identify the assumptions and recommendations from the 1987 Master Plan that are no longer appropriate.
- Develop a set of water supply alternatives that provide a long-term balance between water demands and supplies that include conservation, groundwater, surface water, and recycled water as the building blocks for water management alternatives.
- Evaluate the engineering, institutional, social, financial, and environmental aspects associated with implementing each of the potential water management alternatives.
- Recommend a water management alternative that is flexible and can be modified as situations change and additional information becomes available.
- Identify an appropriate and flexible means of financing the recommended water management alternative.
- Provide a foundation on which to base future decisions regarding the acquisition, construction, operation and maintenance of facilities required for the production, conservation, transmission, distribution, and sale of water.

Zone 40 Groundwater Management Plan

The Zone 40 Groundwater Management Plan (GMP) is a planning tool that assists SCWA in maintaining a safe, sustainable and high quality groundwater resource for users of the groundwater basin underlying Zone 40. The Zone 40 GMP has been prepared by SCWA primarily to begin the groundwater planning process for Zone 40, positioning the agency for future activities. GMPs contain numerous technical requirements and provisions which are briefly summarized below:

- A GMP contains an inventory of water supplies and describes water uses within a given region.
- A GMP establishes groundwater Basin Management Objectives (BMOs) that are designed to protect and enhance the groundwater basin.
- A GMP identifies monitoring and management programs that ensure the BMOs are being met.
- The GMP outlines a stakeholder involvement and public information plan for the groundwater basin.

Sacramento County Department of Water Resources Local Floodplain Management Plan

The Sacramento County Water Agency has established the Local Floodplain Management Plan (2001). The Local Floodplain Management Plan area has been mapped and the Planning Area is included in the majority of the Morrison Creek Stream Group and a portion of the South County area. The Floodplain Management Plan outlines policies and mitigations for minimizing impacts from new development within most areas of Sacramento County.

City of Elk Grove General Plan

One of the goals in the City of Elk Grove General Plan Conservation and Air Quality Element is to provide surface water quality which promotes a healthy aquatic environment that is safe for public use and enjoyment; healthy, well managed marsh and riparian woodlands along the City's waterways; and promoting natural and open space values of urban stream corridors to be preserved and protected. **Table 4.7-1** identifies General Plan policies that pertain to the proposed Project and evaluates the Project's consistency with these policies. While this EIR analyzes the Project's consistency with the General Plan pursuant to CEQA Section 15125(d), the Elk Grove Planning Commission and City Council determine the Project's consistency with the General Plan.

TABLE 4.7-1
PROJECT CONSISTENCY WITH GENERAL PLAN HYDROLOGY AND WATER QUALITY POLICIES

General Plan Policies	Consistency with General Plan	Analysis
Policy CAQ-1: Reduce the amount of water used by residential and non-residential uses by encouraging water conservation.	Yes	Compliance with the City's Water Conservation Ordinance would result in consistency with this policy.
Policy CAQ-5: Roads and structures shall be designed, built and landscaped so as to minimize erosion during and after construction.	Yes	The proposed Project would be subject to the City's Grading and Erosion Control Ordinance and mitigation measures MM 4.7.1 though MM 4.7.4 identified in this section, which would result in the Project being designed, built, and landscaped to minimize erosion.
Policy CAQ-13: Implement the City's NPDES permit through the review and approval of development projects and other activities regulated by the permit.	Yes	Implementation of mitigation measures MM 4.7.1 though MM 4.7.4 identified in this section would require the Project applicant to comply with the City's NPDES permit, which is enforced by the Regional Water Quality Control Board. The permit requires that discharges of pollutants from areas of new development be reduced to the maximum extent practicable. Compliance with this standard requires that control measures be incorporated into the design of new development to reduce pollution discharges in site runoff over the life of the Project. Compliance with the NPDES permit would result in consistency with this policy.

General Plan Policies	Consistency with General Plan	Analysis
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.	Yes	Implementation of mitigation measure MM 4.7.4 identified in this section would ensure that post-development peak storm water runoff discharge rates and velocities are designed to prevent or reduce downstream erosion and 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.	Yes	The proposed Project would not place fill or development in the 100-year floodplain. There are 0.783 acres of wetlands on the Project site. Prior to development within these wetlands, the Project applicant will be required to receive approval from the US Army Corps of Engineers and applicable resource agencies as described in Section, Biological Resources.

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 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.

4.7.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. Pursuant to Appendix G, an impact is considered significant if it will:

- 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 flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Inundation by seiche, tsunami or mudflow.
- Water supply impacts are addressed in Section 4.12 (Public Services and Utilities).

METHODOLOGY

The hydrology and water quality analysis is based on a review of published information and reports regarding regional hydrology, climate, and geology; Drainage Report for Sutter Elk Grove Hospital (BKF Engineers, 2007); Elk Grove General Plan (Amended 2005), Elk Grove General Plan EIR (2003), consultation with agency representatives; and field review of the Project site.

The initial study prepared for the Project determined that the Project would not: place housing within a 100-year flood hazard area; expose people or structures to significant risk or loss due to flooding as a result of failure of a levee or dam; or be located in an area subject to inundation by seiche, tsunami or mudflow. As a result, these issues are not included in the following discussion of impacts.

PROJECT IMPACTS AND MITIGATION MEASURES

Construction Water Quality Impacts

Impact 4.7.1 Soil disturbance associated with construction activities for the proposed Project could cause accelerated soil erosion and sedimentation or the release of other pollutants to local waterways. This would be a **potentially significant** impact.

Construction activities would consist of substantial grading and vegetation removal activities, which would increase soil erosion rates on the areas proposed for development. Although the Project site is relatively flat and the potential for soil erosion is considered low, peak storm water runoff could result in short-term sheet erosion in areas of exposed, raw soil. In addition, the compaction of soils by heavy equipment could reduce the infiltration capacity of the soils thereby increasing the runoff and erosion potential. If uncontrolled, the soil materials could result in engineering problems, blockage of drainage channels, and downstream sedimentation. Elk Grove Creek is located adjacent to the Project site traversing the eastern border.

Vegetation removal and earth-moving activities associated with Project construction may have the greatest potential for detrimental impacts to surface water quality associated with Elk Grove Creek and the removal of vegetation during Project construction could expose site soils to rainsplash, sheetflow and gullying erosion prior to successful revegetation. The cleared, exposed surfaces and soil stockpiles created during construction could create sedimentation in downstream waters. Fuels, lubricants, and other toxic materials used during construction could also potentially enter surface waters. The Construction Stormwater General Permit adopted by the State Water Resources Control Board requires the Project applicant and/or contractor to develop and implement a Stormwater Pollution Prevention Plan (SWPPP). This plan must specify best management practices that would prevent all construction pollutants from contacting stormwater, with the intent of keeping all products of erosion from moving off site into receiving waters. The permit also requires elimination or reduction of non-stormwater discharges to receiving waters and inspection of all best management practices. In addition, refueling and the parking of construction equipment and other vehicles onsite during construction may result in spills of fuel, oil, grease, or related pollutants that may discharge into the drainage channels. Improper handling, storage, or disposal of fuels and materials or improper cleaning of machinery could cause water quality degradation.

Mitigation measure MM 4.5.1 of the Geology and Soils section of this DEIR requires the Project applicant to submit an erosion control plan to the City which will utilize best construction practices in order to limit the erosion effects of the proposed Project prior to issuance of a grading permit for each subsequent phase of the proposed Project. The implementation of an erosion control plan will provide advanced planning that provides solutions to potential erosion problems before they arise. Erosion control planning strategies address broad areas of concern, including management practices, maintenance procedures, and site development approaches. Based on conditions identified in the erosion control plan, management practices related to activities and situations that cause or contribute to erosion would be developed.

However this impact would still be considered potentially significant and further mitigation is required.

Mitigation Measures

MM 4.7.1a Prior to the issuance of grading permits, the Project applicant shall prepare a Storm Water Pollution and Prevention Plan (SWPPP) to be administered through all phases of grading and Project construction. The SWPPP shall incorporate Best Management Practices (BMPs) which describe the site, erosion and sediment controls, means of waste disposal, control of post-construction sediment and erosion control measures and maintenance responsibilities, water quality monitoring and reporting during storm events (which will be responsibility of the Project applicant), corrective actions for identified water quality problems and non-storm water management controls. The SWPPP shall address spill prevention and include a countermeasure plan describing measures to ensure proper collection and disposal of all pollutants handled or produced on the site during construction, including sanitary wastes, cement, and petroleum products. The measures included in the SWPPP shall ensure compliance with applicable regional, state and federal water quality standards. These measures shall be consistent with 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 site; (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. The applicant shall require all construction contractors to retain a copy of the approved SWPPP on each construction site.

Timing/Implementation: *Prior to issuance of grading permits.*

Enforcement/Monitoring: *City of Elk Grove Development Services Department, Planning.*

MM 4.7.1b Grading activities shall be prohibited during the winter months (October 15 to April 15), with exceptions approved by the City. Exposed graded areas shall be protected during the winter months using temporary vegetation, straw, or other appropriate methods.

Timing/Implementation: *Prior to issuance of grading permits.*

Enforcement/Monitoring: *City of Elk Grove Development Services Department, Planning.*

The Project is required to obtain an NPDES construction activities permit, which requires the Project applicant and/or contractor to develop and implement a Stormwater Pollution Prevention Plan (SWPPP). This plan must specify best management practices that would prevent all construction pollutants from contacting stormwater, with the intent of keeping all products of erosion from moving off site into receiving waters. The permit also requires elimination or reduction of non-stormwater discharges to receiving waters and inspection of all best

management practices. The State has published a set of Best Management Practices (BMPs) for both pre- and post-construction periods. Implementation of the above mitigation measures would ensure compliance with City water quality requirements as well as consistency with the City's NPDES permit and would mitigate construction water quality impacts to **less than significant**.

Operational Water Quality Impacts

Impact 4.7.2 Implementation of the Sutter Elk Grove Master Plan Project may degrade long-term water quality due to the deposition of pollutants generated by motor vehicle uses on Project roadways, parking lot areas, and other surfaces both on and offsite, as well as the maintenance and operation of landscape areas. This would result in a **potentially significant** impact.

Development of urban uses on the site would result in a substantial alteration of the existing site conditions and would introduce urban pollutant sources. Urban runoff typically consists of oils, grease, fuel, antifreeze, byproducts of combustion (such as lead, cadmium, nickel, and other metals) and other household pollutants. Precipitation during the early portion of the wet season (November to April) displaces these pollutants into the storm water runoff resulting in high pollutant concentrations in the initial wet weather runoff. This initial runoff with peak pollutant levels can be referred to as the "first flush" of storm events. It is estimated that during the rainy season, the first flush of heavy metals and hydrocarbons occurs during the first five inches of seasonal rainfall.

The amount and type of runoff generated by the Project would be greater than that under existing conditions due to increases in impervious surfaces (see **Table 4.7-2**). There would be a corresponding increase in urban runoff pollutants and first flush roadway contaminants such as heavy metals, oil, grease, as well as an increase in nutrients (i.e., fertilizers), and other chemicals from landscaped areas. These constituents would result in water quality impacts to onsite and offsite drainage flows. These pollutants have the potential to degrade water quality and may result in significant impacts.

The area served by the City of Elk Grove is subject to the requirements of the NPDES Stormwater Permit No. CA0082597, renewed in December 2002 and enforced by the RWQCB. This permit requires that discharges of pollutants from areas of new development be reduced to the maximum extent practicable. Compliance with this standard requires that control measures be incorporated into the design of new development to reduce pollution discharges in site runoff over the life of the Project.

Treatment Control BMPs involve physical treatment of the runoff, usually through structural means. A variety of treatment control measures have been utilized for storm water quality. However, the effectiveness of these controls is highly dependent on local conditions, such as climate, hydrology, soils, groundwater conditions, and extent of urbanization. Other treatment controls that can be used include biofiltration systems, vegetated swales, and oil/water separators. Oil/water separators are designed to remove petroleum compounds and grease, but would also remove floatable debris and settleable solids. The RWQCB is responsible for administering NPDES permit requirements, such as the use of construction and operational BMPs, to ensure that projects are in compliance with water quality standards as set forth in the CWA.

According to the Preliminary Drainage Report prepared for Sutter Hospital, the primary method of storm water collection from the proposed site parking lots would be vegetated swales. The swales would be located within alternate parking medians and the outside perimeters of parking

lots to collect as much storm water runoff as feasible. The swales would be designed and built to remove sediment and pollutants from low levels of storm water runoff. Swales would be designed using criteria listed in the 2007 *Stormwater Quality Design Manual for the Sacramento and South Placer Regions* (Preliminary Drainage Report, 2008).

Mitigation Measures

MM 4.7.2a The Project applicant shall implement BMPs to ensure that long-term water quality is protected. The BMPs shall be designed, constructed and maintained to meet a performance standard established by the City and shall conform to the provisions of the City's NPDES permit. The City or Project applicant shall retain a qualified specialist to monitor the effectiveness of the BMPs selected. Monitoring activities, along with funding for monitoring, shall be established and shall include, but not be limited to, initial setup, annual maintenance, and annual monitoring.

1) The Project shall implement actions and procedures established to reduce the pollutant loadings in storm drain systems. The two main categories of these BMPs are "source control" and "treatment control." Source control BMPs are usually the most effective and economical in preventing pollutants from entering storm and non-storm runoff. Source control BMPs relevant to the proposed Project that shall be implemented include:

   - Public Education/Participation activities. Information shall be provided to new project residents regarding pollution prevention;

   - Illegal Dumping controls. The Covenants, Conditions, and Restrictions (C, C, & R's) for the Project shall include a prohibition on the dumping of waste products (solid waste/liquid waste and yard trash) into storm drain systems, open space areas, and creeks;

   - Stormwater pollution source controls shall be conditioned to provide a permanent storm drain message "No Dumping – Flows to Creek" or other approved message at each storm drain inlet. This may be accomplished with a stamped concrete impression (for curbs) or manufactured colored tiles, which are epoxied in place adjacent to the inlet (for parking lots and areas without curbs).

   - Street and storm drain maintenance activities. These activities control the movement of pollutants and remove them from pavements through catch basin cleaning, storm drain flushing, street sweeping, and by regularly removing illegally dumped material from storm channels and creeks. (The City of Elk Grove would be responsible for regular storm drain maintenance within the public right of way; grease traps and other stormwater quality control devices on private property shall be maintained by the Project.)

Timing/Implementation: *BMPs and implementation procedures shall be submitted and approved by the City prior to issuance of grading permit; BMPs shall be implemented and monitored throughout the life of the Project.*

Enforcement/Monitoring: *City of Elk Grove Development Services Department.*

MM 4.7.2b Biofilter swales and vegetated strips shall be placed in the bottom of channel areas and be designed to provide biofiltration of pollutants in Project runoff. The Project engineer shall consult with the City when designing these areas and the developer shall submit designs of the areas to the City for review and approval prior to approval of the improvement plans. Water quality control features shall be consistent with the City's NPDES permit (NPDES No. CAS082597).

Timing/Implementation: *Prior to approval of improvement plans for each water quality facility.*

Enforcement/Monitoring: *City of Elk Grove Development Services.*

MM 4.7.2c All storage areas shall be located away from any drainage features and provide water quality control measures in storm drainage facilities such as grease and sediment traps, vegetative filters, and containment structures for hazardous materials. This requirement shall be reflected on site plans and improvement plans. Water quality control features shall be consistent with the City's NPDES permit (NPDES No. CAS082597).

Timing/Implementation: *Prior to approval of site plans and improvement plan for non-residential development.*

Enforcement/Monitoring: *City of Elk Grove Development Services.*

Implementation of the above mitigation measures, which would require the use of effective BMPs and ensure compliance with City water quality requirements as well as consistency with the City's NPDES permit, would reduce the Project's operational water quality impacts to **less than significant**.

Groundwater Quality

Impact 4.7.3 Development activities within the Project area would result in excavation several feet below existing grade. It is possible that seasonal groundwater would be exposed and would interact with pollutants associated with urban runoff that would be captured during utility trenching activities. This impact is considered to be a **potentially significant** impact.

At the time of the geotechnical investigation performed for the Project, minor seepage was encountered within the Hospital building footprint at a depth of about 15 feet below existing site grade. According to the geotechnical report prepared for the Project, this seepage is likely due to perched groundwater overlying on-site cemented soils. This seepage and soil moisture would vary in quantity and extent depending on rainfall, irrigation practices, and/or runoff conditions.

Grading activities may require earthwork cuts and fill of about one to two feet in vertical extent in order to achieve level building pads, level roads, and positive surface drainage. In general, excavations for underground utilities are not anticipated to exceed three to eight feet below existing site grade. The Project applicant had indicated that storm drain and sanitary sewer lines are anticipated to reach 10 to 14 feet deep. With the possibility of groundwater resources

existing less than one foot below storm drain and sanitary sewer lines, groundwater resources could be impacted during construction activities.

The following mitigation measure shall be implemented.

Mitigation Measures

MM 4.7.3 As part of the final design of the Project, soil borings shall be taken at representative locations within the Project footprint to analyze the subsurface soils that are present and the elevation of the subsurface water table. If these soil borings identify shallow groundwater within two (2) feet of the proposed bottom elevation of underground utilities, a liner and/or best available water quality control features (i.e., leachate management system) shall be incorporated into the design of these underground utilities, subject to City drainage standards and approval.

Timing/Implementation: *Prior to Improvement Plan Approval.*

Enforcement/Monitoring: *City of Elk Grove Development Services Department, Planning.*

Implementation of the above mitigation measure would ensure that groundwater quality is protected, not allowing the potential contamination of groundwater by the underground utilities and would mitigate the impact to **less than significant**.

Drainage Patterns, Surface Runoff, and Localized Flooding

Impact 4.7.4 Development of the proposed Project may substantially alter the existing drainage pattern of the site as well as result in increased surface runoff and localized flooding. This would be a **potentially significant** impact.

With implementation of the proposed Project, the entire site would be developed with medical office building, hospital, and retail buildings, parking facilities, and landscaping. The development of the proposed Project would occur over several phases of construction. Such development would alter existing drainage patterns and increase existing surface water runoff. Increased runoff volumes from the site could result in off-site flooding if allowed to exit the Project area unchecked.

When land is in a natural or undeveloped condition, soils, mulch, and plant roots absorb rainwater. This absorption process is called infiltration or percolation. Much of the rainwater that falls on natural or undeveloped land slowly infiltrates into the soil and is stored either temporarily or permanently on the surface or in underground layers of soil. When the soil becomes completely saturated with water or the rate of rainfall exceeds the infiltration capacity of the soil, the rainwater begins to flow on the surface of land to low lying areas, ditches, channels, streams, and rivers. Rainwater that flows off of a site is defined as storm water runoff.

The infiltration and runoff process is altered when a site is developed with urban uses. Houses, buildings, roads, and parking lots introduce asphalt, concrete, and roofing materials to the landscape. These materials are relatively impervious, which means that they generally absorb less water than a natural undeveloped landscape. As impervious surfaces are added to the ground conditions and surface drainage becomes more efficient, the natural infiltration of water and the capabilities of soil storage are reduced. As a result, the volume and rate of storm water

runoff increases. The increased volumes and rates of storm water runoff may result in increased downstream flows if not properly mitigated.

The proposed Sutter Elk Grove Master Plan Project would consist of approximately 393,000 square feet of medical office building, retail, and hospital uses in addition to new roadways and parking lots to serve the Project at full development for a total of 1,411,431 square feet of impervious surface area. Impervious surfaces could impact drainage conditions both on and off-site. **Table 4.7-2** and **Table 4.7-3** summarize the area of pervious and impervious surfaces and the estimated storm water runoff rates for each phase in the Sutter Elk Grove Master Plan Project.

TABLE 4.7-2
SURFACE AREA AND STORMWATER RUNOFF FLOW RATE SUMMARY

Phase	Buildings	Pervious Surface Area (Square Feet)	Impervious Surface Area (Square Feet)	Flow Rate (Cubic Feet per Second)	Drains To:
Existing	MOB 1, 2	98,709	262,682	16.0	Existing pipes in Big Horn and Laguna Blvd
I	Ambulatory Surgery Center	57,452	96,569	8.5	18″ – 54″ pipes in Laguna Blvd
II	MOB 3	38,572	158,246	11.0	54″ pipe to Elk Grove Creek
III	Hospital (to 133,000 square feet)	157,881	478,135	25.5	54″ pipe to Elk Grove Creek
IV	MOB 4	27,367	83,363	7.0	54″ pipe to Elk Grove Creek
V	Retail/Complementary Uses/Medical Offices	39,483	78,008	7.5	54″ pipe to Elk Grove Creek
VI	MOB 6	43,812	100,264	8.0	54″ pipe to Elk Grove Creek
VII	MOB 7	15,830	43,292	3.8	54″ pipe to Elk Grove Creek
		29,182	88,610	7.6	18″ pipe in Longleaf Drive
VIII	Hospital Expansion (to 193,000 square feet)	0	23,000	1.0	54″ pipe to Elk Grove Creek
TOTAL		508,288	1,412,169	--	--

Source: Preliminary Drainage Report, 2008

Note: Flow rates peak flows calculated from the 100-year design storm, and are estimates calculated from the Elk Grove Improvement Standards, Section 9, and Elk Grove Standard Drawing SD-3

TABLE 4.7-3
PERVIOUS AND IMPERVIOUS SURFACE AREA SUMMARY

Site Condition	Pervious Surface Area	Impervious Surface Area
Pre-Development (MOB 1 & 2)	1,657,042 square feet (38.05 acres)	262,682 square feet (6.02 acres)
Post-development (through Phase VIII)	508,288 square feet (11.68 acres)	1,411,431 square feet (32.39 acres)

Source: Preliminary Drainage Report, 2008

The proposed Project is planned to be built in several phases. Improvements and infrastructure would be constructed to serve the buildings in each particular phase. It is absolutely necessary that permanent drainage facilities would adequately serve the Project, or phase of the Project, consistent with City standards.

According to the Preliminary Drainage Report prepared for Sutter Hospital, the primary method of storm water collection from the proposed site parking lots would be vegetated swales. The swales would be located within alternate parking medians and the outside perimeters of parking lots to collect as much storm water runoff as feasible. The swales would be designed and built for two uses. The first is to remove sediment and pollutants from low levels of storm water runoff. The second is to convey large-levels of storm water to an underground system of catch basins and pipes for deposit into three outlet locations off-site. Swales would be designed using criteria listed in the 2007 *Stormwater Quality Design Manual for the Sacramento and South Placer Regions* (Preliminary Drainage Report, 2008).

Storm water conveyance would be achieved via underground storm water pipes to three outlet connections. The northern section of the site, including the Phase I (Ambulatory Surgery Center and adjacent parking), would drain to existing storm drain pipes running under Laguna Boulevard. The watershed area of the northern section of the site is approximately 3.5 acres. The southwestern section of the site, including the proposed western parking lot of Phase VII (Medical Office Building (MOB) VII), would drain to an existing 18" public storm drain pipe crossing Longleaf Boulevard. This pipe eventually runs 250 feet south to a City maintained 48" to 54" storm drain pipe whose outfall is located in Elk Grove Creek. The watershed area of the southwestern section of the site is approximately 2.7 acres. The rest of the site would drain to the 42" through 54" storm drain pipe running from Monetta Drive. This area includes MOB III (Phase II), the hospital (Phase III), MOB IV (Phase IV), one-story retail and/or medical offices (Phase V), MOB VI (Phase VI), MOB VII (Phase VII), and the parking lots surrounding these facilities. The location and size of the three drainage areas described above closely correlate with the areas of the drainage subsheds shown in the *City of Elk Grove Flood Control and Storm Drainage Master Plan Report*.

The hospital building is proposed to be located where an existing public storm drain pipe extends from Monetta Drive to Elk Grove Creek. This pipe would need to be relocated to covey storm water around the north side of the hospital. Before the hospital building would be constructed, approximately 1,550 feet of 48" public storm drain pipe would be constructed as part of a storm drain relocation activities associated with Phase III. Its alignment would extend from Monetta Drive, then under proposed parking facilities for MOB V and MOB VI, then east across the northern drive aisle of the hospital, then between the proposed hospital and existing bike trail until it reconnects with the existing 54" public storm drain pipe, which is approximately 100 feet short of its existing outfall. Approximately 1,340 feet of 48" and 54" public storm drain pipe would be removed to allow the construction of the Hospital building. The proposed pipe sizes are estimates, based on a rough estimate of the hydrologic conditions of the watershed at

complete buildout, and would be verified by complete hydrologic and hydraulic calculations during the design process. No new outfalls into Elk Grove Creek are proposed.

Detention of stormwater on the Project site is not proposed.

Proposed Public Storm Drainage Facilities

Drainage of the 250-foot Monetta Drive extension would be accommodated via new public storm drain pipes for conveyance to the relocated 48" public storm drain.

The Longleaf Drive extension would extend approximately 1,200 feet. Complete underground infrastructure, including a public storm drain, is planned to be built under Longleaf Drive. The underground utilities would serve both the Sutter Elk Grove Master Plan Project and future developments on the eastern frontage of Longleaf Drive. A 1,000 foot long public storm drain is planned to run six feet east of the Longleaf Drive centerline. This storm drain would convey storm water runoff from Longleaf Drive, portions of the Sutter Elk Grove Medical Campus adjacent to the Hospital and MOB VII, and the Laguna Business Park. The drainage area of the Longleaf Drive storm drain is in agreement with the watershed shown in the *City of Elk Grove Flood Control and Storm Drainage Master Plan Report*. Storm water would flow to the north until it reaches the cul-de-sac of Longleaf Drive. At that point, the storm drain would turn to the northeast under the future alignment of Laguna Springs Drive, then to the northwest across the Sutter Elk Grove Medical Campus, until it intersects with the rerouted 54" public storm drain. The size of the Longleaf Drive storm drain is estimated to be up to 30" at its furthest downstream point.

Phased Development

As mentioned above, the proposed Project is planned to be built in several phases and the surface improvements and infrastructure would be built to serve the buildings that would be constructed in each particular phase. The following discussion summarizes proposed infrastructure improvements for each phase.

Phase I

The Ambulatory Surgery Center and its adjacent parking lot would be built during Phase I. During this phase, 1,000 feet of storm drain pipes collecting runoff from the Ambulatory Surgery Center and vegetated swales within the parking lot would be built. These pipes would drain to an existing 18" public storm drain crossing Laguna Boulevard.

Phase II

During Phase II, MOB III would be constructed. The surface improvements for this phase would include parking lots service MOB III and the future Hospital, as well as the connection to Monetta Drive. The 48" - 54" public storm drain from Monetta Drive would be relocated during this phase, just prior to the construction of the Phase II surface improvements. Also, vegetated swales and storm drain connections from the parking lot and MOB III to the relocated 48" public storm drain would be constructed.

Phase III

A major portion of the Hospital would be built in Phase III. 133,000 square foot of the proposed 193,000 square feet Hospital facility would be built during this phase. Surface improvements for this phase would include parking lots serving the Hospital, the Longleaf Drive extension, and

connections from Longleaf Drive to the Sutter campus. Drainage improvements would include vegetated swales in the Hospital parking lots, storm drain connections from the Hospital, and the public storm drain line under Longleaf Drive.

Phase IV

In Phase IV, MOB IV would be built as an extension of the Hospital building. Additional parking lots between the Hospital and Longleaf Drive would be constructed. Drainage improvements include roof drain connections from MOB IV, vegetated swales within the expanded parking lot, and private storm drain lines connecting to the as-built Longleaf Drive storm drain.

Phase V

Phase V would consist of the construction of 20,000 square feet of medical offices with some retail use. Drainage improvements for this phase include vegetated swales, roof drain connections, and private storm drain pipes. The north and east portions of this phase would drain to as-built private storm drains leading to the relocated 48" public storm drain. The west portion of this phase would drain to the existing 36" public storm drain under the existing section of Monetta Drive.

Phase VI

MOB VI, adjacent to the 20,000 square feet of retail and medical office uses, would be constructed during Phase VI. Drainage improvements for this phase include vegetated swales, roof drain connections, and private storm drain pipes. A connection to the relocated 48" public storm drain under the drive aisle connecting to Monetta Drive would be made to convey storm water for the southern portion of the surface improvements developed in this phase. The rest of the site would drain to private as-built storm drains leading to the Phase V connection to the 36" public storm drain under Monetta Drive.

Phase VII

In Phase VII, MOB VII would be constructed south of the Hospital. Drainage improvements for this phase include vegetated swales, roof drain connections, and private storm drain pipes. The western section of this phase would drain to existing public pipes under the existing section of Longleaf Drive. The rest of the area would drain to the as-built public storm drain under the extended section of Longleaf Drive.

Phase VIII

Phase VIII of the proposed Project, includes the completion of build-out of the hospital facility that was initially constructed as part of Phase III Hospital Development. The Hospital will expand to its ultimate capacity of 193,000 square feet. Site improvements will be limited to connections of building services to a-built site utilities, as well as landscape and hardscape improvements adjacent to the expanded hospital. No parking or utility main improvements are proposed in the phase. As shown in **Table 4.7-2**, this phase of the Project would increase the surface area of impervious surfaces 23,000 square feet.

Such development of the proposed Project would substantially alter the existing drainage pattern of the site or area as well as result in increased surface runoff and localized flooding. For this reason, it is absolutely necessary that permanent drainage facilities would adequately serve the Project, or phase of the Project, consistent with City standards.

Mitigation Measures

MM 4.7.4 In order to reduce the potential for increase runoff and flooding due to Project development, the Project applicant shall demonstrate that permanent drainage facilities will adequately serve the Project, or each phase of the Project, consistent with City drainage standards prior to the approval of improvement plans. The Project applicant shall demonstrate that increases in off-site flooding impacts will not result, and that the planned drainage facilities are either available or will be available upon site development. This demonstration may take the form of final plans and/or reports, which shall be reviewed and approved by the City. Interim storm drainage facilities shall be considered on a case-by-case basis to meet this mitigation measure.

Timing/Implementation: *Prior to the approval of improvement plans for each phase of the Project.*

Enforcement/Monitoring: *City of Elk Grove Development Services Department.*

Implementation of the above mitigation measure would reduce impacts to drainage patterns, surface runoff, and localized flooding and would help ensure runoff from the site controlled prior to its release into the downstream areas and would reduce the impact to **less than significant**.

Exposure of Structures and Facilities to Flood Hazards and Potential Damage

Impact 4.7.5 The Project site is not located in a 100-year flood hazard area as determined by FEMA, nor is it located in the path of a stream or watercourse. Structures and facilities constructed on the site would, accordingly, not be exposed to flood hazards and potential damages from offsite sources. The proposed Project would result in a **less than significant** impact associated with flood hazards from offsite sources.

As previously stated, the Project site is located within FEMA floodplain Zone X, an area determined to be outside of the 100-year and 500-year flood plain as defined by FEMA Flood Insurance Rate Map, Community Panel Number 060262 0320 E, July 6, 1998. Zone X is a non-restrictive FEMA flood hazard designation. According to the Preliminary Drainage Report prepared for the Project, the 100-year flood adjacent to the Sutter Elk Grove Medical Campus is contained within Elk Grove Creek, which is located just beyond the eastern boundary of the proposed Project.

The elevation of the majority of the Project site averages 32.5 feet above sea level and the site slopes gradually to the east, towards Elk Grove Creek. According to the Preliminary Drainage Report, which is based on the *City of Elk Grove Flood Control and Storm Drainage Master Plan Report*, the water surface elevation of a 100-year flood event is in Elk Grove Creek at 29.2 feet above sea level. The City of Elk Grove Design Standard requires that new structures be protected against the 10-year flood event, and that the pad elevations for structures be set at least one foot above all sources of flooding during the 100-year flood event. The finished floor of the Ambulatory Surgery Center is planned to be 33.1 feet above sea level. The finished floor of the Hospital, MOB III, and MOB IV structures are planned to be 34.2 feet above sea level. The finished floor of the 20,000 square feet of retail\complementary uses and medical offices as well

as MOB VI is proposed to be 35 feet above sea level. MOB VII would have a finished floor elevation of 34.7 feet above sea level.

Therefore, for all proposed structures of the Sutter Elk Grove Master Plan Project, the structures would be set well above the elevations required by the City of Elk Grove for 100-year flood event clearance (Preliminary Drainage Report, 2007). This impact is considered to be **less than significant**.

Mitigation Measures

None required.

4.7.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The City of Elk Grove is located within the 27,000 square mile Sacramento River watershed, which includes the portions of the Sacramento River and Cosumnes River that are the western and eastern boundaries of the City. More specifically, the City is part of the Morrison Creek Stream Group, which covers 192 square miles, and includes the waterways of Elder, Elk Grove, Florin, Gerber, Laguna (and tributaries), Morrison, Strawberry, Union House, and Whitehouse Creeks. Approved, planned, proposed, and reasonably foreseeable development, identified in **Table 4.0-1**, would result in the construction of additional impervious surfaces that would change drainage patterns, reduce water absorption, increase surface runoff, and result in urban water pollutants.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Regional Water Quality, Runoff Patterns and Flooding

Impact 4.7.6 The proposed Project would contribute to the cumulative effects of degradation of regional water quality, changes to runoff patterns, and the potential for increased flooding. This would be a **significant cumulative i**mpact.

Operation of the proposed Project would contribute to cumulative water quality impacts in the Project area. In addition to direct surface water quality impacts, cumulative development, including development of the Elk Grove General Plan Land Use Map and other approved, proposed, pending, and reasonably foreseeable projects (see **Table 4.0-1**) would result in indirect surface water quality impacts associated with human intrusion into wetlands and waterways.

The City of Elk Grove General Plan Environmental Impact Report (City of Elk Grove, 2003) determined that cumulative impacts to water quality and flooding would be less than significant, with implementation of relevant General Plan Policies and Action Items, as well as mitigation included in the General Plan. Development of the Project site with urban uses was anticipated in the General Plan. The proposed Project has been evaluated for consistency with the relevant General Plan Policies and Action Items and appropriate mitigation measures are applied to the Project, as identified throughout this section.

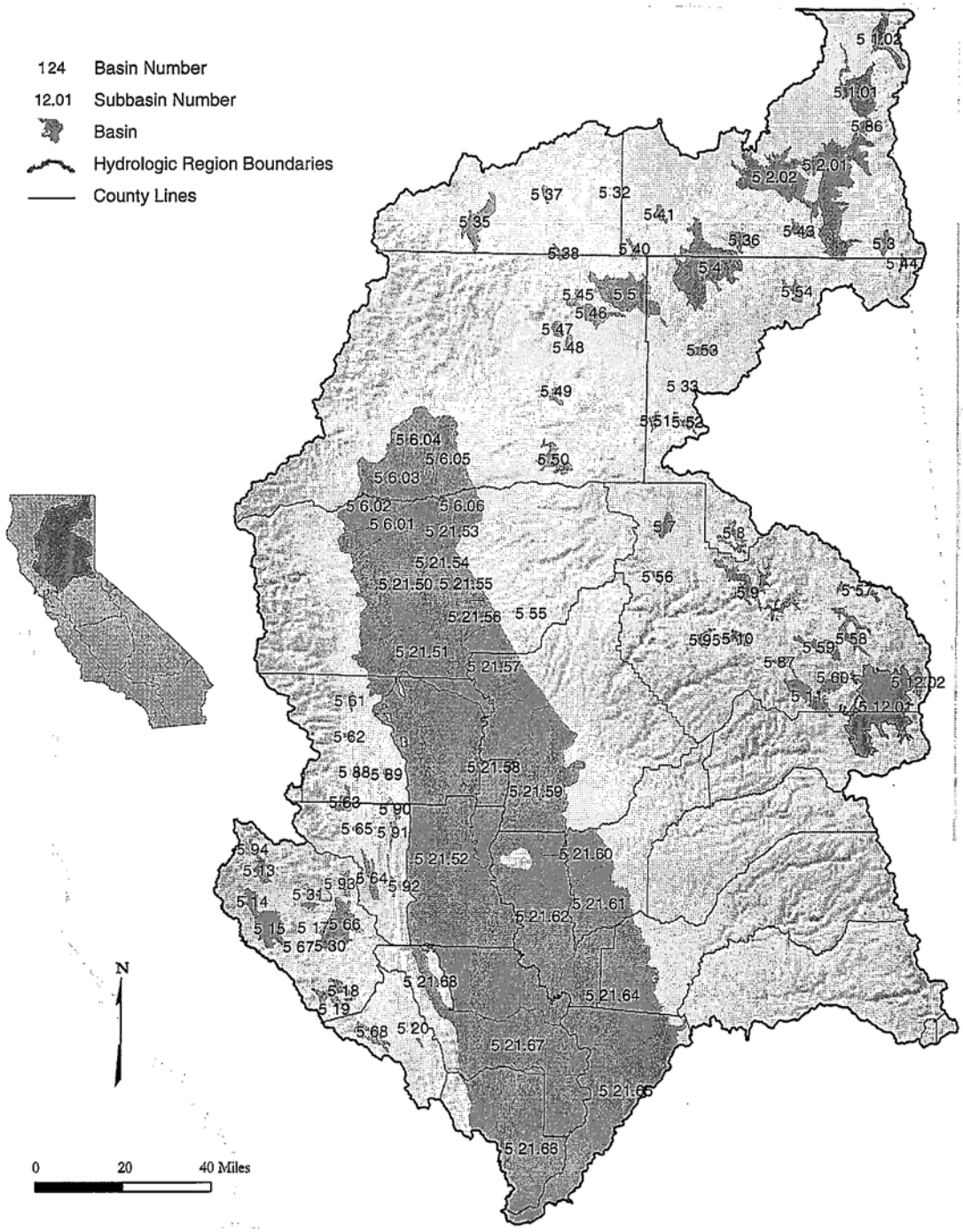
The proposed Project would be required to pay the drainage impact fee for impacts to the 100-year peak flow and storm water quality associated with development located adjacent to Elk

Grove Creek, which the proposed Project site is located. The amount of fees to be paid by development projects and use of the fees for drainage improvements are identified in the *Engineer's Report for Formation of Zones 11A, 11B, and 11C (Fee Plan)*, produced by the Sacramento County Water Agency. Payment of this fee by the developer would mitigate cumulative drainage and flooding impacts by providing drainage improvement including, but not limited to: trunk pipe facilities, open channel construction, dual-purpose detention, upsizing bridges and large culverts for ultimate capacities, and property acquisition for the Project area.

Conformity with the standards provided in the City's Drainage Manual as well as with the requirements of the Land Grading and Erosion Control Ordinance would reduce the Project's contribution to water quality impacts. Additionally, the City's NPDES permit requires that City place restrictions on new development in order to reduce pollutants in runoff from construction sites and to reduce pollutant discharges to the maximum extent practical from all new development projects. Conformance with the City's General Plan, City ordinances related to drainage and grading, and NPDES requirements would reduce the Project's contribution to cumulative hydrology and water quality impacts.

Mitigation Measures

Implementation of mitigation measures **MM 4.7.1a, MM 4.7.1b, MM 4.7.2a** through **MM 4.7.2c**, **MM 4.7.3**, and **MM 4.7.4** would ensure the Project's consistency with the City's General Plan and City ordinances related to drainage and grading, and would reduce the Project's contribution to cumulative groundwater, water quality, and flooding impacts to a **less than significant cumulative** level by requiring the use of BMPs and compliance with applicable regional, state and federal water quality standards.



Source:

FIGURE 4.7-1
Sac River Hydrologic Region

City of Elk Grove
Development Services

REFERENCES

BKF Engineers. 2008. *Preliminary Drainage Report for Sutter Hospital Elk Grove, California*. Sacramento, CA. May 2008.

California Environmental Protection Agency, Regional Water Quality Control Board Central Valley Region. *Total Maximum Daily Load (TMDL) Report for the Pesticides Diazinon and Chlorpyrifos in: Arcade Creek, Elder Creek, Elk Grove Creek, Morrison Creek, Chicken Ranch Slough, and Strong Ranch Slough.* Sacramento County, CA. 2004. Found at: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/urban_creeks/urban_crks_rpt.pdf

California Environmental Protection Agency, Regional Water Quality Control Board Central Valley Region. *Sacramento and Feather Rivers Basin Plan Amendment, Final Staff Report.* Sacramento County, CA. 2007.

California Department of Water Resources. *California's Groundwater Update [Sacramento Valley Groundwater Basin, South American Sub-Basin], Bulletin No. 118*. Sacramento, CA. 2006. (Bulletin 118, 2006).
Found at:
http://www.dpla2.water.ca.gov/publications/groundwater/bulletin118/basins/pdfs_desc/5-21.65.pdf

California Department of Water Resources. *California's Groundwater Update, Chapter Seven, Sacramento River Hydrologic Region.* 2003. (DWR, 2003).
Found at:
http://www.dpla2.water.ca.gov/publications/groundwater/bulletin118/Bulletin118_5-SR.pdf

City of Elk Grove, 2003. *City of Elk Grove Municipal Code*. Elk Grove, CA. 2003.

City of Elk Grove, 2005. *City of Elk Grove General Plan, Conservation and Air Quality Element.* Elk Grove, CA. Adopted November, 2003; Amended January, 2005.

City of Elk Grove. *City Code, Land Grading and Erosion Control Ordinance*. Elk Grove, CA.

City of Elk Grove. *Lent Ranch Marketplace Draft Environmental Impact Report, Volume I*. Elk Grove, CA. October 2000.

Kleinfelder, 2008. *Geotechnical Investigation Report, Proposed Sutter Elk Grove. Volume I and II.*

SCWA, 2005. *Zone 40 Water Supply Master Plan.* Sacramento County Water Agency. Sacramento, CA. February 2005.