SECTION 4.9
HYDROLOGY AND WATER QUALITY

4.9.1 INTRODUCTION

This Section evaluates the potential impacts of the proposed Project on hydrology, drainage and water quality, and recommends mitigation measures to reduce the significance of such impacts. Information in this section is based on the City of Banning *General Plan* (2006); City of Banning *General Plan Final Environmental Impact Report* (2005); *Butterfield Specific Plan* prepared by RBF Consulting (May 2011); City of Banning *2010 Urban Water Management Plan* (May 2011); *Banning/Deutsch Property Backbone Drainage Study* prepared by RBF Consulting (August 2006); the *Geotechnical Investigation for the Deutsch Property Highland Springs Avenue and Wilson Street, Banning California* prepared by Geocon (June 2005); geotechnical data prepared by Geocon (Appendix E); the *Maximum Perennial Yield Estimates for the Banning and Cabazon Storage Units and Available Water Supply from the Beaumont Basin* prepared by Geoscience Support Services (May 2011); and a suite of regulatory service reports prepared by Glenn Lukos Associates (contained in Appendix C) and other available resources. The *Banning/Deutsch Property Backbone Drainage Study* is included in its entirety in Appendix G. Regional, local and Project site water supply is addressed in detail in Section 4.14 (*Water Supply)* and will not be a part of this Section's analysis.

4.9.2 EXISTING CONDTIONS

4.9.2.1 ENVIRONMENTAL SETTING

Regional Location and Climate

The 1543-acre Project site is located in the City of Banning, California at the City's western boundary. The site is north of and adjacent to Wilson Street, east of and adjacent to Highland Springs Avenue and west of and adjacent to Highland Home Road, in the City of Banning, California. The project site is divided into 78 Planning Area's (PA) corresponding to density designations in the Specific Plan. Exhibits 3.0-1 *Regional Location Map* and 3.0-2 *Local Vicinity Map* show the Project site and immediate surroundings.

The area's climate is characterized by cool winters and hot summers. Precipitation in the region generally occurs as rainfall, although snowfall can occur at high elevations. Most precipitation occurs during just a few major storms. Mean annual rainfall in the Banning area for the period of record is approximately 17.60 inches per year, with approximately 92 percent occurring from November through April. Mean annual minimum temperature is 51.8 °F and mean annual maximum temperature is 78°F. The highest average maximum temperature of 96.6°F occurs in August and the lowest average minimum temperature of 39.4°F occurs during January. Both the temperature and precipitation information presented in Tables 4.9-1 and 4.9-2 is derived from measurements taken at the Beaumont 1E Weather Station, located approximately 5 miles

west of Banning and the Riverside County Flood Control District Station 12 in Banning respectively.

Table 4.9-1
Normal Temperatures in Banning CA

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Max °F	63.7	66.2	68.3	74.0	80.2	89.5	96.3	96.6	91.4	82.3	71.6	64.7	78.7
Mean °F	51.8	53.2	54.7	58.8	64.4	71.6	77.6	78.1	74.1	66.2	57.3	52.1	63.3
Min °F	39.8	40.2	41.1	43.6	48.6	53.7	58.8	59.5	56.7	50.0	43.0	39.4	47.9

Source: California Weather Profiles/Banning CA Weather (July 28, 2010)
Note: The WSA (Appendix J) and the 2010 UWMP contain different average climate data than what is presented in Table 4.9-1 and 4.9-2. The WSA and UWMP use source data from the City of Banning Year End Water Production Report 2010, Prepared by Pat Logan.

Table 4.9-2
Normal Precipitation in Banning, CA

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Inch	4.18	4.07	3.72	1.10	0.73	0.21	0.27	0.23	0.63	0.72	1.44	2.00	19.30

Source: California Weather Profiles/Banning, CA Weather (July 28, 2010)

Regional Surface Water Hydrology

The primary responsibility for the protection and enhancement of water quality in California has been assigned by the California legislature to the State Water Resources Control Board. For planning purposes, the Board divides California into nine hydrologic regions (HR). Each region is divided into major hydrological units (HU), each HU is further divided into hydrologic areas (HA) and each HA is further subdivided into hydrologic subareas (HAS). In accordance with the original Department of Water Resources definitions, HUs are the entire watershed of one or more streams; HAs are major tributaries and/or major groundwater basins within the HU; and HSAs are major subdivisions of HAs including both water-bearing and non-water bearing formations.

The Project site is located at the northwesterly boundary of the Colorado River Hydrologic Region (HR), Salton Sea Transboundary Watershed, in the Whitewater River Hydrologic Unit (HU), the San Gorgonio Hydrologic Area (HA), and the Banning Hydrologic Subarea (HAS), and falls under the jurisdiction of the Colorado River RWQCB (Region 7).[1]

[1] California Regional Water Quality Control Board, Colorado River Basin Region, *Water Quality Control Plan for the Colorado River Basin – Region 7*, June 2006 Update, Region 7 Index (Colorado River Basin Maps), Report available

The westernmost part of the City of Banning Planning Area is located at the summit of the San Gorgonio Pass, which divides two major watersheds: the San Jacinto River watershed to the west, under the jurisdiction of the Santa Ana Regional Water Quality Control Board, and the Salton Sea Watershed, under the jurisdiction of the Colorado River Basin Regional Water Quality Control Board, to the east. The watershed boundary is defined by a surface water drainage divide at the west end of the San Gorgonio Pass, between Banning and Beaumont that roughly corresponds to the alignment of Highland Springs Avenue, running north-south between the San Bernardino Mountains and the San Jacinto Mountains. The jurisdictional boundary between the two Regional Boards follows the same alignment; refer to Exhibit 4.9-1 *Regional Board Jurisdictional Boundary*. Highland Springs Avenue forms the western boundary of the Project site.

Surface drainage from the Project site is directed through the City of Banning and the Riverside County Flood Control District storm drainage system, which discharges to the San Gorgonio River, a tributary of the Whitewater River. The Whitewater River flows to the Salton Sea.

Regional Groundwater Hydrology

As noted previously, the Project site is located within the Colorado River Hydrologic Region (HR). The Region covers approximately 13 million acres (20,000 square miles) in southeastern California. Surface runoff drains to many closed basins or to the Colorado River. Many of the alluvial valleys in the region are underlain by groundwater aquifers that are the sole source of water for local communities. The Colorado River Hydrologic Region contains 63 groundwater basins and additional subbasins.

- **Coachella Valley Regional Groundwater Basin (CVRGB)**

  The City of Banning is located in the Coachella Valley Regional Groundwater Basin (Basin Number 7-21) and is part of the Colorado River Basin Water Quality Control Board-designated Coachella Valley Planning Area (CVPA). The CVPA contains both the Whitewater Hydrologic Unit, in which the Project is located, and the East Salton Sea Hydrologic Unit. The Basin includes four subbasins, including the San Gorgonio Pass groundwater basin (Basin No. 7-21.4), which provides groundwater that serves the Project site. Groundwater in the CVPA is stored principally in the unconsolidated Pleistocene sediments and is generally unconfined. The CVPA is faulted extensively, altering groundwater movement. The Mission Creek, Banning and San Andreas faults form effective barriers to groundwater movement.

at http://www.waterboards.ca.gov/coloradoriver/publications_forms/publications/docs/basinplan_2006.pdf, accessed 7/30/2010. Also see "Endnotes" for definitions of Hydrologic Units, Hydrologic Areas, and Hydrologic Subareas as used by the Regional Board

- **San Gorgonio Pass Groundwater Basin**

  According to the *Water Supply Assessment* (Appendix J), the City's water resource area is located within the San Gorgonio Pass area in Riverside, California. It includes an approximately 158-square-mile watershed area in the San Gorgonio Pass and within the immediate highland areas of the San Bernardino and San Jacinto Mountains overlying the San Gorgonio Pass groundwater basin. The San Gorgonio Pass basin is bounded on the north by the San Bernardino Mountains and by semi-permeable rocks, and on the south by the San Jacinto Mountains. A surface drainage divide between the Colorado River and South Coastal Hydrologic Study Areas bounds the basin on the west. The eastern boundary is formed by a bedrock constriction that creates a groundwater cascade into the Indio Basin.[2]

- **Local Subbasins**

  The San Gorgonio Pass groundwater basin includes five hydraulically connected groundwater basins, which constitute the City of Banning groundwater resource area: the Banning, Banning Bench, Banning Canyon, Cabazon, and Beaumont basins; refer to Section 4.14, *Water Supply*, Exhibit 4.14-1, *City of Banning Groundwater Basins*, for the location and boundaries of these local basins.

  The current basin boundaries are those most recently defined in the 2006 USGS *Scientific Investigations Report 2006-5026*. The groundwater basins are defined by groundwater levels, bedrock outcrops and geologic faults, which were delineated based on significant differences in static water levels between wells or lack of pumping effects observed across basin boundaries (USGS 2006). The effect of the faults on groundwater movement is not well defined. However, it is generally known that they impede normal flow causing a difference in groundwater levels across the fault, but do not prevent flow from crossing the fault.

  The water supply for agricultural and municipal uses in Banning is supplied by pumping groundwater from wells in the Canyon, Banning Bench, Beaumont, and Banning basins. The City discharges its treated wastewater over the Cabazon basin and operates one active well in this basin.

  Groundwater recharge to the Banning area is obtained from precipitation infiltrating into the ground within the surface water catchments and particularly in the canyons north of the City. An additional source of recharge is subsurface inflow (i.e., underflow) from basin to basin, infiltration of Whitewater River diversions in the Banning Canyon, and from percolation of canyon flows through the gravelly soils of the canyon bottom. The San Gorgonio River running southerly through the Banning Canyon provides intake

[2] City of Banning, *Draft City of Banning 2010 Urban Water Management Plan*, prepared by Geoscience Support Services, Inc., dated May 2011.

areas for distributing water to spreading ditches that interconnect with spreading ponds located approximately one mile north of the Banning Bench to enhance percolation.[3]

The following provides a general description of each of the basins used by the City for domestic water production. A full discussion of water supply is provided in Section 4.14 (*Water Supply*) of this EIR. Estimates of annual safe yield for each of the basins are derived from the Geoscience *Maximum Perennial Yield Estimates* Report (May 2011).

- **Banning Canyon**

  The Banning Canyon basin is located to the north of the Banning Bench basin. The total surface area of the basin is approximately 1,058 acres. The primary surface water drainage feature within this basin is the San Gorgonio River. The canyon bottom comprises alluvium and the canyon sides are bedrock. The City currently operates 8 active production wells within the Banning Canyon basin. Most of the City's groundwater is produced from the aquifer within this basin.

  Additional recharge occurs through the operation of diversion of surface water from the upper reaches of the Whitewater River Drainage into Banning Canyon, which was initiated in 1913. The diverted water flows along steep mountain slopes for approximately 14 miles in a mostly concrete lined conveyance system known as "the Flume". Banning Heights Mutual Water Company utilizes approximately 1,000 AFY of Whitewater River diversions, the remainder of the diverted water flows into the San Gorgonio River below the Banning Heights Mutual Water Company abstraction point. A portion of the natural runoff and the Whitewater River diversions are diverted into spreading ponds located approximately one mile north of the Banning Bench to enhance percolation.

- **Banning Bench Basins**

  The Banning Bench basin is located to the north of the Banning basin (refer to Exhibit 4.14-1, *City of Banning Groundwater Basins*). The total surface area of the basin is approximately 3,753 acres. The City of Banning currently operates three production wells within the Banning Bench, Wells 1, 2, and 3.

- **Banning Basin**

  The Banning basin lies south of the Banning Bench basin and west of the Beaumont basin (refer to Exhibit 4.14-1). The total surface area is approximately 2,489 acres. The area is underlain by alluvial sediments, with bedrock occurring to the north in the San Bernardino Mountains. The City of Banning currently operates four active production wells within the Banning basin.

[3] City of Banning, *2010 Urban Water Management Plan* prepared by Geoscience Support Services, Inc., May 2011.

- **Beaumont Basin**

  The Beaumont basin covers approximately 19.5 square miles and is bounded on the north by the Banning and Cherry Valley Faults and on the south and east by the San Timoteo Canyon Fault, and the west by the Banning and Central Banning Faults. A portion of the Beaumont basin is located within the Banning, Calimesa and Cherry Valley city limits. However, this basin is primarily located within the City of Beaumont. Beaumont-Cherry Valley Water District (BCVWD), Yucaipa Valley Water District, and the City of Banning pump water from this basin as well as private users. The City operates five wells in the Beaumont basin.

- **Cabazon Basin**

  The Cabazon basin encompasses approximately 26.9 square miles. The Cabazon basin is located near the eastern boundary of the City, southeast of the Banning and Banning Bench basins. Groundwater extraction is the result of production from the City of Banning Well C-6, Cabazon Water District, Mission Springs Water District as well as private producers.[4]

- **Local Basin Recharge**

Groundwater has been the only source of potable water supply for residential, industrial, and agricultural users in the Beaumont and Banning areas of the San Gorgonio Pass. Natural groundwater recharge is achieved through stream flow infiltration and percolation of rainfall and surface runoff in stream channels that flow from local mountains and hills. Recharge to the Banning and Cabazon basins occurs through underflow from the Beaumont basin. Additionally, underflow from the Banning Canyon basin flows into the Banning Bench, and from the Banning Bench into the Cabazon basin. Historically, groundwater extractions in the San Gorgonio Pass groundwater basin have exceeded natural recharge, resulting in declining water levels. To assure a continuous supply of domestic water to meet current and projected demand, groundwater replenishment (e.g., artificial recharge) programs and wastewater reclamation strategies have been, and are being, implemented by area water agencies and purveyors; refer to Section 4.14, *Water Supply*, for a more detail discussion of recharge activities.[5]

Sources of artificial recharge to the various basin basins including return flow from applied irrigation water on crops, golf courses, and landscape; septic tank seepage; infiltration of storm water runoff including its diversion into spreading basins; and the use of imported water applied to recharge ponds.

[4] City of Banning, *2010 Urban Water Management Plan* prepared by Geoscience Support Services, Inc., May 2011.

[5] City of Banning, Draft 2010 Urban Water Management Plan (May 2010).

One private water well is located on-site adjacent to Smith Creek north of Wilson Street. This well will be properly abandoned as part of the construction activities that occur on-site.

Regional Water Quality

Surface Water Quality

Surface water quality within the upper reaches of the Whitewater River watershed is generally good, with most parameters being consistent with the water quality objectives contained in the CRBRWQCB's Basin Plan. The lower reaches of the Whitewater River generally have higher nutrient concentrations and high bacteria counts are also observed in the downstream portions. Beneficial uses of Smith Creek and Pershing Channel are not specifically designated by the Regional Board; however, the beneficial uses of the downstream San Gorgonio River and the Whitewater River include municipal and domestic water supply, agricultural supply, groundwater recharge, water contact recreation, non-contact water recreation, cold freshwater habitats, and wildlife habitat. Common contaminants in urban and stormwater runoff in the region include:

- **Sediment**
  Sediment is a common component of stormwater, and can be a pollutant at certain levels. Sediment can be detrimental to aquatic life by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in waterbodies. Sediment can also transport other pollutants that are attached to it including nutrients, trace metals, and hydrocarbons. Erosion and subsequent sedimentation is a natural process of the highly-erodible San Bernardino Mountains. Other sources of sediment include stream banks, bridge pilings, vacant lots, and construction sites.

- **Nutrients**
  Nutrients, including nitrogen and phosphorous, are critical to the growth of plants; however, in high amounts, nutrients can result in excessive or accelerated growth of vegetation, such as algae, which can result in water quality impairment. Common sources of nutrients include fertilizers used in landscaping and agriculture, human and animal waste, and effluent from wastewater treatment facilities. Common measures of nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).

- **Oil and Grease**
  Oils and grease include a wide array of hydrocarbon compounds, some of which are toxic to aquatic organisms at low concentrations. Sources of oil and grease include leakage from tanks, pipelines, and old extraction sites, accidental spills, cleaning of

vehicles and equipment, leaks in hydraulic systems, and improper disposal of restaurant wastes and used oil.

- **Organic Compounds**
  Organic compounds (e.g., adhesives, cleaners, sealants, solvents, etc.) may be found in urban stormwater runoff in low concentrations. The widespread use of these substances and their improper disposal are the common sources of these compounds.

- **Pesticides**
  Bioaccumulation of pesticides can have adverse effects on aquatic life and the animals that consume that life. Some of these substances were prohibited long ago due to negative impacts but are still detected in low concentrations and are now termed "legacy" pollutants.

- **Gross Pollutants**
  Trash, debris, and other floatables are the result of the improper use, storage, and disposal of packaging and other products in urban environments, plant debris, animal excrements, street litter, and other organic matter. In addition to negative aesthetic impacts, these substances may harbor bacteria, viruses, vectors, and depress the dissolved oxygen levels in water bodies.

Groundwater Water Quality

Groundwater quality varies throughout the San Gorgonio Pass area, depending upon naturally occurring conditions, historical and current land use patterns, and groundwater extraction patterns. Naturally occurring soil and geologic conditions in the region often result in elevated levels of dissolved solids in groundwater measured in terms of Total Dissolved Solids (TDS).[6] Commonly referred to as "hard" water, these dissolved solids include inorganic salts (including calcium, magnesium, potassium, sodium, bicarbonates, chlorides, and sulfates) and a small amount of organic matter. Increases in groundwater TDS concentrations are a function of the recharge of storm and urban runoff, imported water, and incidental recharge. They are also attributed in part to the legacy of salt contamination from past agricultural uses, including fertilizer use and waste disposal. Groundwater in the San Gorgonio Pass Subbasin is characterized as predominantly calcium-sodium bicarbonate type TDS content for selected samples from municipal wells ranged from 106 to 205 mg/L. There are no listed impairments of water quality, however the presence of nitrates in certain well locations within the Beaumont Management Zone are of potential concern.

[6] Total dissolved solids, abbreviated TDS, is an expression for the combined content of all inorganic and organic substances contained in a liquid that are present in molecular, ionized or micro-granular (colloidal) suspended form.

Nitrates are regulated by the US EPA through Primary Drinking Water Standards and by the State Department of Water Resources through Basin Plan standards adopted by its regional boards. Nitrates in the Pass area are believed to emanate primarily from fertilizers, animal feces, and septic systems. Studies conducted by Wildermuth Environmental in 2006 determined that the source of rising nitrate concentrations in some wells owned by the Beaumont Cherry Valley Water District was septic tank leakage (also known as on-site waste disposal systems (OSWDS), primarily located in the unincorporated Cherry Valley area of Riverside County. The Wildermuth study concluded based on its modeling, that nitrate-contaminated groundwater could eventually impact all BCVWD and Banning production wells and that left unmitigated, OSWDS discharges are sufficient to cause nitrate concentrations to exceed basin plan objectives. The City of Beaumont is working with the County of Riverside to address these issues.

There are no other known water quality problems in local groundwater. At present, nitrate concentrations from sampled wells in the Cherry Valley area generally range from less than 1.0 to 11.3 mg/L. Fluoride concentrations range from less than 0.5 mg/L to 3.0 mg/L. As noted, TDS content for selected samples from municipal wells ranges from 106 to 205 mg/L (California Department of Water Resources, 2003)[7]. None of the groundwater sources that could potentially supply the Project site exceed "Sources of Drinking Water" policy standards. Table 4.9-3, *Inventory of Groundwater Quality at Selected Wells* depicts groundwater quality characteristics for two wells within the Beaumont and Banning Basins each.

Table 4.9-3
Inventory of Groundwater Quality at Selected Wells

Basin	Well ID	Date	pH	Nitrate as mg/L	Sodium as mg/L	Chloride as mg/L	Sulfate as mg/L	Alkalinity
Beaumont	2S/1W28A1	7/14/2003	7.5	7.54	17.4	13.7	18.3	157
Beaumont	3S/1W03K2	6/23/2004	7.9	1.3	26.8	9.74	7.8	136
Banning	3S/1E17C1	7/27/2005	8.5	1.49	47.7	13.9	`8.7	121
Banning	3S/1E18D1	8/29/2006	8.4	2.25	52.7	15.9	2.3	138

Source: San Gorgonio Pass Water Agency Service Area – Inventory of Groundwater Quality at Selected Wells (USGS)

[7] California Department of Water Resources. 2003. *California's Groundwater. Bulletin 118 data as cited in Liberty XXIII Renewable Energy Power Plant Project EIR D.8 Hydrology and Water Quality*.

Project Site Hydrology

The Project site is located in the upper northwest region of the Whitewater River Watershed, a subunit of the Salton Sea Watershed. Historically, the Butterfield site has received surface drainage flows from two separate watersheds: Smith Creek and Pershing Channel. In its existing condition most of the Project site drains to Smith Creek, an ephemeral drainage, described below, which traverses the site from north to south through the center of the Specific Plan area.

Approximately 323 acres in the southeastern quadrant of the Specific Plan area drain to Pershing Channel, which is located on the west side of Highland Home Road north of Wilson Street. This channel's flows are conveyed under Wilson Street via an existing culvert into an existing channel south of the street.

- **Smith Creek Watershed**

  Smith Creek is the Project site's primary natural drainage course and in its existing condition flows from north to south within the central portion of the Project site. Within the Project boundary, Smith Creek is characterized as a natural stream channel approximately 30 feet wide and ranges from three to five feet in depth. Typically dry for most of the year, it can carry a large, high velocity flow of water during heavy rain events. The channel itself is only sparsely vegetated, exhibiting a well-scoured sandy bottom and soil sidewalls with sparse riparian vegetation along the banks. The total Smith Creek watershed is approximately 3,348 acres in size, which includes areas to the north and east of the proposed Project site. At the southern boundary of the Project site, Smith Creek is routed under Wilson Ave through an existing concrete culvert and continues south-southeast until it reaches the San Gorgonio River. The existing peak flow rate as measured at Wilson Street is 3,518 cubic feet per second (cfs) in a 6-hour interval.[8] Approximately 1,220 acres or an estimated 79 percent of the Project site lies within the Smith Creek watershed.

- **Pershing Channel Watershed**

  The Pershing Channel watershed is approximately 664 acres in size and is located to the east of Smith Creek and includes both east and west of Highland Home Road. The channel exists as an unimproved natural stream with the exception of 1,500 linear feet (lf) between the Edison easement that traverses the central portion of the Project site and Wilson Street, which is concrete lined. At Wilson Street, the Pershing Channel flows are conveyed through an existing culvert and the channel continues southeast to the San Gorgonio River, which conveys flows to the Whitewater River and thence to the Salton Sea. The peak (100 year storm event) flow as measured at Wilson Street is 946 cfs (6 hr.

[8] RBF Consulting, 2006. *Banning/Deutch Property Backbone Drainage Study (2nd Submittal) prepared for Pardee Homes.*

duration). Approximately 323 acres or 21 percent of the Project site lies within the Pershing Channel watershed.

Floodplain and Floodplain Management

A floodplain is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which are areas covered by the flood but which do not experience a strong current. Floodplains generally contain unconsolidated sediments that include accumulations of sand, gravel, loam, silt, and/or clay. The soil characteristics of floodplains make them particularly suitable for groundwater recharge while the periodic wetting of a floodplain allows them to support particularly rich ecosystems.

Floodplain management is accomplished through the implementation of an overall program of corrective and preventative measures for reducing flood damage and preserving and enhancing natural resources in the floodplain. Such programs may include emergency preparedness plans, flood control works, adoption and implementation of floodplain management regulations, and open space plans. The fundamental floodplain management program in the United States is the National Flood Insurance Program (NFIP). The three components of the NFIP are: (1) flood insurance; (2) floodplain management; and (3) flood hazard mapping.

To accomplish component 3 above, the Federal Emergency Management Agency (FEMA) publishes flood hazard maps, called Flood Insurance Rate Maps (FIRMs). The purpose of the FIRM is to show the areas in a community that are subject to flooding and the risk associated with these flood hazards. One of the areas shown on the FIRM is a Special Flood Hazard Area (SFHA). The SFHA is the area that has a 1-percent or greater chance of flooding in any given year; this area is also referred to as the base floodplain or the 100-year flood plain.

The City's Comprehensive General Plan EIR notes that Banning is located in several large drainage basins (watersheds) and floodplains on the valley floor are susceptible to flood hazards, which can be divided into three categories:

1. Flash flooding down natural channels;
2. Ponding due to man-made or naturally occurring obstructions to flow; and
3. Sheet flooding on alluvial fans where most development in the City occurs

Exhibit 111-16 of the Comprehensive General Plan EIR (*Flood Zones in the Study Area)* indicates that the Project site is prone to at least two of these conditions. The site is susceptible to flash flooding along Smith Creek as well as flooding due to sheet flow. Flood Insurance Rate Maps (FIRM) for the Banning area identify both areas of 100-year flood, where base flood elevations and flood hazard factors have not been determined, and areas of 100-year flood where base flood elevations and flood hazard have been determined. The latter designation applies to the

Smith Creek area, particularly in the southern portion of the Project site. The USGS has designated most of the balance of the site as a flood-prone area due to sheet flow. The southern quadrants of the Project site area located within the FIRM-defined 100-year floodplain of Smith Creek. Most of this floodplain is designated Zone A7, meaning that base flood elevations have been determined. The floodplain area is subject to inundation with a probability of occurrence of 1 percent in any given year; however, portions of this area, being in or near the Smith Creek channel, could be inundated much more frequently.

Both the Comprehensive General Plan and the Banning Master Drainage Plan (RCFCD) note that channel modifications and construction of a debris basin are proposed for the undeveloped portion of the Smith Creek alluvial fan area north of Wilson Street. These are included as part of the drainage improvements that will be completed as part of the Butterfield Specific Plan Project, as described under the heading *Master Drainage System,* below.

A Letter of Map Revision (LOMR) is FEMA's modification to an effective FIRM or Flood Boundary and Floodway Map (FBFM) or both. LOMRs are generally based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the Special Flood Hazard Area (SFHA). The LOMR officially revises the FIRM or FBFM, and sometimes the Flood Insurance Study (FIS) report[9]. A LOMR represents a change in the configuration of the floodplain due to extensive physical changes such as stream channelization or channel modification, or major fill placement that raises the elevation of building pads above the BFE.[10]

4.9.2.2 REGULATORY FRAMEWORK

Clean Water Act (CWA)

The CWA was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The CWA also directs states to establish water quality standards for all 'waters of the United States" and to review and update such standards on a triennial basis. Other provisions of the CWA related to basin planning include Section 208, which authorizes the preparation of waste treatment management plans, and Section 319, which mandates specific actions for the control of pollution from non-point sources. The United States Environmental Protection Agency (U.S. EPA) has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs such as the National Pollutant Discharge Elimination System

[9] Riverside County Flood Control District, *Frequently Asked Questions – Flood Zone,* http://www.floodcontrol.co.riverside.ca.us/content/RegFZFAQ.htm#5, accessed 7/29/2010.

[10] FEMA, *Letter of Map Amendment (LOMA) and Letter of Map Revision Based on Fill (LOMR-F) Process*, http://www.fema.gov/plan/prevent/fhm/fmc_loma, accessed 7/28/2010.

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(NPDES) Program to the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs).

Section 303(c)(2)(b) of the CWA requires states to adopt water quality standards for all surface waters of the Untied States. Section 304(a) requires the U.S. EPA to publish water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Water quality standards are typically numeric, although narrative criteria based upon bio-monitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards.

- **Section 303(D) and Total Maximum Daily Loads (TMDLs)**
  The CWA contains two strategies for managing water quality. One is a technology-based approach that includes requirements to maintain a minimum level of pollutant management using the best available technology. The other is a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the water resource can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA bridges these two strategies. Section 303(d) requires that States make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list, the States are required to develop total maximum daily loads or TMDLs. TMDLs are established at the level necessary to implement the applicable water quality standards from both point and non-point sources. Section 303(d), 303(e), and their implementing regulations require that approved TMDLs be incorporated into water quality control plans. The U.S. EPA has also established regulations at 40 CFR 12 requiring that NPDES permits be revised to be consistent with any approved TMDL. A federal regulation, effective October 2001, requires that implementation plans be developed along with the TMDLs.

- **National Pollutant Discharge Elimination System (NPDES)**
  The NPDES permit system was established in the CWA to regulate both point and non-point source discharges. Point sources are generally a municipal or industrial discharge at a specific location or pipe. Non-point sources are diffuse discharges that originate over a wide area rather than from a definable point. Non-point pollution often enters the receiving water in the form of surface runoff and is not conveyed by way of pipelines or discrete conveyances. Urban stormwater runoff and construction site runoff are diffuse sources regulated under the NPDES permit program because they are conveyed in discrete conveyances and discharge to receiving waters at discrete locations. Each non-stormwater runoff NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that the U.S. EPA must consider in setting

effluent limits for priority pollutants. In California, the authority to implement the NPDES program was delegated to the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB).

Flood Insurance Rate Maps (FIRM)

FEMA is responsible for determining flood elevations and floodplain boundaries based on studies performed by the U.S. Army Corps of Engineers (USACE). FEMA is also responsible for distributing the Flood Insurance Rate Maps (FIRMs), which are used in the NFIP. These maps identify the locations of special flood hazard areas, including the 100-year flood plain. The Project site contains areas mapped by FEMA as a SFHA and flood hazard regulations apply to the proposed Project.

State of California Water Quality Control Plans (WQCP)

Responsibility for the protection of water quality in California rests with the SWRCB and the nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and State water quality statutes and regulations. The RWQCBs develop and implement Water Quality Control Plans (WQCP) that considers regional beneficial uses, water quality characteristics, and water quality problems. In cases where a WQCP does not contain a standard for a particular pollutant, other criteria are used to establish a standard. Other criteria may be applied from the SWRCB documents (e.g., the Inland Surface Waters Plan and the Pollutant Policy Document, or the California Toxics Rule) or from EPA water quality criteria developed under Section 304(a).

All projects resulting in discharges, whether to land or water, are subject to Section 13263 of the *California Water Code* and are required to obtain approval of Waste Discharge Requirements (WDRs) by the RWQCB. Land and groundwater-related WDRs (i.e., non-NPDES WDRs) regulate discharges of privately or publicly treated domestic wastewater and processed and wash-down wastewater.

Porter-Cologne Water Quality Control Act

The *Porter-Cologne Water Quality Control Act* (PCWQCA) establishes the SWRCB and each RWQCB as the principal State agencies for coordinating and controlling water quality in California. Specifically, the Act authorized the SWRCB to adopt, review, and revise policies for all waters of the State (including both surface and groundwater) and directs the RWQCBs to develop regional Basin Plans. Section 13170 of the *California Water Code* also authorizes the SWRCB to adopt water quality control plans on its own initiative.

In the Banning area both the Santa Ana Regional Water Quality Control Board (SARWQCB) and the Colorado River Basin Regional Water Quality Control Board (CRBRWQC) have the

authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction. Water quality objectives for the Whitewater River watershed and its tributaries are specified in the Water Quality Control Plan (WQMP) for the Colorado River Basin adopted in June 2006 by the CRBRWQCB. The Plan divides the Basin area into 6 hydrologic planning areas, among them the Coachella Valley Basin PA in which the Whitewater River Watershed and the San Gorgonio Pass Groundwater Subbasin are located. The principal elements of the Basin Plan are the statement of beneficial water uses protected under the Plan, water quality objectives necessary to protect the designated beneficial water uses, and the strategies for achieving the water quality objectives. Because the Project site is located within the CRBRWQCB jurisdiction, all discharges to surface waters are subject to the Colorado River Basin Plan.

The project site overlays the Beaumont groundwater basin, and sits immediately east of the boundary between the SARWQCB and CRBRWQCB jurisdictions. The Beaumont groundwater basin is split geographically between the jurisdictions; however, the primary sources of surface water used to recharge to the basin are located within the Upper Santa Ana River Watershed, under the jurisdiction of the SARWQCB, as is the majority of the basin itself. Accordingly, groundwater standards for the Beaumont basin are set by the SARWQCB.

- **Waste Discharge Requirements**
  The *Porter-Cologne Water Quality Control Act* provides that, "All discharges of waste into the waters of the State are privileges, not rights." Furthermore, all dischargers are subject to regulation under the Act, including both point and non-point source dischargers. The SWRCB and RWQCBs has administrative permitting authority in the form of administrative tools (waste discharge requirements (WDRs), waivers of WDRs, and basin plan prohibitions) to address ongoing and proposed waste discharges. WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and to prevent the creation of nuisance conditions. For discharges into surface waters, a NPDES permit application must be filed with the appropriate RWQCB. Violations of WDRs may be addressed by issuing Cleanup and Abatement Orders (CAOs), Cease and Desist Orders (CDOs), assessing administrative civil liability, or seeking imposition of judicial civil liability or judicial injunctive relief.

- **Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP)**
  In March 2000, the SWRCB adopted the SIP, which establishes: (1) implementation provisions for priority pollutant criteria promulgated by the TPA through the National Toxics Rule (40 CFR 131.36) and through the California Toxics Rule (40 CFR 131.38), and for priority pollutant objectives established by the RWQCBs in their water quality plans; (2) monitoring requirements for 2, 3, 7, 8-TCDD (dioxin) equivalents; and (3) chronic toxicity control provisions. In addition, this policy includes special provisions for

certain types of discharges and factors that could affect the application of other provisions of this policy. A list of priority pollutants and associated criteria can be found in the CFR, Section 40, Part 131.

- **California Toxics Rule**
  Other applicable water quality criteria include the California Toxics Rule (CTR), which establishes numeric criteria for aquatic life and human health protection for about 130 priority trace metal and organic constituents. Numeric water quality objectives include specific concentration-based values that may be imposed on the effluent or at the edge of an allowable mixing zone within the receiving water.

- **Inland Surface Water Quality Standards**
  The SWRCB has developed water quality objectives for inland surface waters through the 1991 Inland Surface Waters Plan (ISWP). Included among the provisions of these objectives is the requirement that effluent limits are to be imposed, either through NPDES permits or WDRs, to ensure that water quality objectives are not exceeded in the receiving waters outside a designated mixing zone. The more stringent objectives are applied to discharges that contain priority pollutants.

National Pollutant Discharge Elimination System – State of California Implementation

- **Construction General Permit**
  The SWRCB permits all regulated construction activities under Order No. 98-08-DWQ (1999). This Order requires that, prior to beginning any construction activities, the permit applicant must obtain coverage under the General Construction Permit by preparing and submitting a Notice of Intent (NOI) and paying an appropriate fee to the SWRCB. Additionally, coverage under the general permit is not effective until an adequate Stormwater Pollution Prevention Plan (SWPPP) has been prepared. A separate NOI is submitted to the SWRCB for each construction site.

  Construction activities subject to the NPDES Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, which result in soil disturbances of a least 1 acre of total land area. 2003 revisions to the original Construction General Permit clarify that all construction activities, including small construction sites of less than 1 acre but part of a larger common plan of development of at least one acre, must obtain coverage under the Permit. Because construction of the Project would cumulatively disturb more than 1 acre, all of its improvement and development activities would be subject to these requirements.

- **Storm Water Pollution Prevention Plan (SWPPP)**
  The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges; and (2) to describe and ensure the implementation of Best Management Practices (BMPs) to reduce or eliminate sediment and other pollutants in stormwater and non-stormwater discharges.

  BMPs are intended to reduce impacts to the Maximum Extent Practicable (MEP), a standard created by Congress to allow regulators the flexibility necessary to tailor programs to the site-specific nature of municipal stormwater discharges. Regulations do not define a single MEP standard, but reducing impacts to the MEP generally relies on BMPs that emphasize pollution prevention and source control, with additional structural controls as needed.

  In 2009, the SWRCB adopted an updated General Construction Permit that became effective on July 1, 2010.

Basin Plan

Both the Santa Ana RWQCB and the Colorado River RWQCB implement a number of federal and State laws, the most important of which are the *Porter-Cologne Water Quality Act* and the federal *Clean Water Act*. Both the Water Quality Control Plan Santa Ana River Basin (8) (1995, and as amended in 2004 and updated in 2008) and the Colorado River Basin Water Quality Control Plan (adopted June 2006) were prepared in compliance with the federal CWA and the State PCWQA. The Basin Plans establish water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the Santa Ana River and Colorado River Basins. Beneficial uses and water quality objectives, together, comprise the relevant water quality standards. These Basin Plans cover the various surface watersheds and groundwater basins within their respective jurisdictions. Because of its unique geographic location, the Project site may be, in various instances and depending upon the water resource involved, subject to the standards contained in one or both of the cited Basin Plans.

County of Riverside and County of Riverside Flood Control District NPDES Permit MS4 Permit (Municipal Stormwater Permit)

The Riverside County Flood Control and Water Conservation District (District or RCFCD) service area encompasses portions of three major watersheds (drainage areas): the Santa Ana, the Santa Margarita, and the Whitewater. The discharge of stormwater from municipal storm drainage systems within each of these three watersheds is regulated pursuant to a NPDES MS4 Permit[11] (NPDES Permit) administered by a separate RWQCB. In the case of the Whitewater Watershed, in which the Project site is located, the District, in conjunction with the County of

[11] The term MS4 is an acronym for Municipal Separate Storm Sewer System.

Riverside (County), Coachella Valley Water District (CVWD), and the cities of Banning, Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs and Rancho Mirage (Cities), operates pursuant to the NPDES Permit for the Whitewater Watershed initially adopted on May 22, 1996.

The initial Permit expired on May 22, 2001 and as required by the Permit renewal procedures, the Permittees' submitted a Report of Waste Discharge (ROWD) to the Regional Board that led to the subsequent adoption of Permit No. 01-077 on September 5, 2001. Permit No. 01-077 incorporates the Permittees' proposed Stormwater Management Plan (SWMP), which was developed during the initial Permit term, along with additional management programs that were subsequently developed. On May 21, 2008, the Regional Board adopted the region's third term permit, Order Number R7-2008-0001 (2008 Permit). This new permit seeks to improve programs established in the previous term. It expires on May 21, 2013.

The County of Riverside and the Riverside County Flood Control and Water Conservation District are the Principal Permittees. The Cities, including Banning, are identified as Co-Permittees. The City of Banning, although included as a Permittee on the referenced MS4 Permit, does not share an interconnected MS4 with the remainder of the Permittees. The MS4 operated by the City of Banning discharges directly into the San Gorgonio River, a receiving water. Most MS4 discharges from the City of Banning infiltrate to groundwater basins. However, the City of Banning is included in the MS4 Permit to facilitate coordination with the regional programs implemented by the Permittees and to reduce the administrative duties of the Regional Board. A draft General Construction Permit has been issued as part of the renewal of the MS4 Permit. As currently written, the General Construction Permit is exponentially more stringent than the 2001 Permit.

- **Storm Water Management Program**

  The 2008 Permit requires the Permittees to update the elements outlined in that permit. This requires revision or expansion of the Permittee's Stormwater Management Program (SWMP). This effort is still underway. A Draft SWMP was published and circulated for public comment on April 15, 2009. When approved by the Regional Board, the Whitewater River Region SWMP will describe programs for compliance with the Board's Order No. R7-2008-0001. This revised 2009 Whitewater River Region SWMP updates the 2006 SWMP prepared by the Permittees and describes the stormwater and urban runoff management program that will be implemented during the term of Order No. R7-2008-0001. The revisions will reflect programmatic improvements based on the Permittee's experience in implementing the 2001 SWMP, findings of the monitoring program, and implementation of statewide water quality policies. A key element of this revision is the development of a Water Quality Management Plan (WQMP) for the Whitewater River Region. The WQMP describes requirements for treatment of urban runoff and management of peak flow and volume for specified categories of new development and redevelopment.

- **Water Quality Management Plan (WQMP)**
  WQMP is the acronym for Water Quality Management Plan. A project-specific WQMP is a plan for managing the quality of stormwater or urban runoff that flows from a developed site after construction is completed and the facilities or structures are occupied and/or operational. A project-specific WQMP describes the site design, source control and treatment control Best Management Practices (BMPs) that will be implemented and maintained throughout the life of a project and is used by property owners, facility operators, tenants, facility employees, maintenance contractors, etc. to prevent and minimize water pollution that can be caused by stormwater or urban runoff.

  Prior to 2009 potential post-construction impacts associated with urban runoff located in the Whitewater River Watershed were addressed through Supplement A of the Whitewater River Watershed Stormwater Management Plan (SWMP). However, in 2009 the RWQCB adopted a WQMP for the Watershed that replaced pursuant to the requirements of Section F.1.c.iv of the 2009 MS4 Permit (Colorado River Basin Regional Water Quality Control Board Order No. R7-2008.0001), which requires the preparation, approval and implementation of a project-specific WQMP for all discretionary new development projects submitted after June 15, 2009, that fall into one of the Priority Development Project categories. The proposed Project is a Priority Project pursuant to the Order as it includes single-family hillside residences that will create 10,000 square feet or more of impervious area where the natural slope is 10 percent or greater where erosive soil conditions are known, will involve the development of home subdivisions with more than 10 housing units, and will include parking lots of 5,000 square feet or more with 25 or more parking spaces that will be potentially exposed to urban runoff.

City of Banning Comprehensive General Plan and General Plan EIR (2006)

The City of Banning General Plan EIR includes analysis of impacts associated with the implementation of the proposed General Plan as well as the revised Banning Zoning Code. Since the proposed Project is an amendment and restatement of an approved Specific Plan that was in place prior to the adoption of the 2006 General Plan Update, its impacts were assumed in the General Plan analysis of hydrologic impacts including flood zone development requirements. The General Plan EIR includes mitigation measures that are expected to be implemented both on a City-wide basis and in the course of hydrologic analysis and review on a project-by-project basis. These mitigation measures require the following:

- **<u>City of Banning General Plan Mitigation Measures</u>**

GP-HYD-1-1: Require all new development to complete on site drainage improvements, at their expense, as part of project development (Hydrology Mitigation Measure F).

GP-HYD1-2: Major drainage facilities, including debris basins and flood control channels, shall be designed to maximize their use as multi-purpose recreational facilities that maintain the functional requirements of the drainage facilities (Hydrology Mitigation Measure G).

GP-HYD1-3: The City shall cooperate in securing FEMA map amendments, recognizing the importance of redesignation of the 100-year flood plains within the City boundaries and SOI improvements are completed (Hydrology Mitigation Measure K).

GP-HYD1-4: In conjunction with the RCFC, the City shall coordinate and cooperate in the filing of appropriate FEMA application materials to incrementally secure amendment to the Flood Insurance Rate Maps for the City, consistent with existing and proposed improvements (Hydrology Mitigation Measure L).

GP-HYD1-5: All new development shall be required to incorporate adequate flood mitigation, such as grading that prevents adverse drainage impacts to adjacent properties, on-site retention of runoff, and the adequate siting of structures located within flood plains. (Hydrology Mitigation Measure P).

GP-HYD1-6: Storm water retention shall be enforced through the development review process and routine site inspection (Hydrology Mitigation Measure Q).

GP-HYD1-7: The City shall establish and enforce regulations and guidelines for the development and maintenance of project-specific on-site retention/ detention basins, which implement the NPDES program, enhance groundwater recharge, complement regional flood control facilities, and address applicable community design policies (Water Resources/ Quality Mitigation Measure I).

GP-HYD1-8: The City shall evaluate all proposed land use and development plans for their potential to create groundwater contamination hazards from point and non-point sources, and shall confer with other appropriate agencies, as necessary, to assure adequate review (Water Resources/ Quality Mitigation Measure J).

City of Banning Municipal Code

On January 12, 2010, the City of Banning adopted Ordinance No. 1415, amending Title 13, Chapter 13.24, of the Municipal Code (now entitled "Stormwater Code") to bring it into compliance with the requirements of its Municipal NPDES Permit No. CAS617002 (R7-2008-0001. Among other things, the amended Stormwater Code addresses water quality on construction sites (Section 13.24.110 (*Construction Sites)*, which was amended in its entirety, and new development (Section 13.24.120 (*New Development and Redevelopment)*, which was also amended in its entirety. Section 13.24.110 requires land development activities to include provisions for the management of stormwater runoff from the property, which is to include volumetric or flow based treatment control BMP design criteria, which shall consist of constructing storage and/or infiltration facilities including basins, and make provision to store runoff from rainfall events up to and including the 100-year, 3-hour duration event. Post-development peak urban runoff discharge rates may not exceed pre-development peak urban runoff discharge rates. Section 13.24.120 requires new development to control stormwater runoff so as to prevent any deterioration of water quality that would impair subsequent or competing uses of water and further requires new development to implement BMPs designed to control the rate and volume of stormwater runoff from new developments so as to minimize the discharge and transport of pollutants.

Chapter 15.64 of the Banning Municipal Code is the City's Floodplain Management Ordinance. Chapter 15.64 authorizes the City to restrict or prohibit uses that could be dangerous to health safety, and property due to water or erosion hazards, to control the alternation of natural floodplains, stream channels, and natural protective barriers, to control filling, grading, dredging and other development that may increase flood damage, prevent or regulate the construction of flood barriers which could divert flood waters or increase flood hazards in other areas, and to require measures to protect uses against flood damage at the time of construction.[12]

In addition to the City of Banning, the Riverside County Flood Control and Water Conservation District (RCFCD) is responsible for the management of regional drainage within and in the vicinity of Banning, including rivers, major streams and their tributaries, and areas of significant sheet flow. The District handles flood control planning, construction of drainage improvements for regional flood control facilities, and watershed and watercourse protection. The City, however, remains directly responsible for the management of local drainage. Both agencies coordinate in the planning and approval of mitigation measures.[13]

[12] City of Banning Municipal Code, Chapter 15.64.020 – Methods of reducing flood losses. The provisions of Chapter 15.64 apply to all areas of "special flood hazards" within the jurisdiction of the City as defined in Section 15.64.040(B) of the Code, which includes the Project site.

[13] City of Banning Comprehensive General Plan Draft EIR, *Section III(D) Hydrology*, pp III-86, 2005.

Municipal Code Chapter 18 (*Erosion and Sediment Control*) contains the City's requirements and standards for construction and post-construction phase BMPs for sediment control that impact water quality.

4.9.3 SIGNIFICANCE THRESHOLD CRITERIA

THRESHOLDS OF SIGNIFICANCE

Appendix G of the *CEQA Guidelines* contains the Initial Study Environmental Checklist form used during preparation of the Project's Initial Study. This form includes questions relating to hydrology, drainage, and water quality. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if it would:

a) Violate of any water quality standards or waste discharge requirements;

b) Substantially deplete of groundwater supplies or substantially interference 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 that permits have been granted); (*Refer to Section 4.14, Water Supply*)

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on-or off-site;

d) 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 that would result in flooding on- or off-site;

e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

f) Otherwise substantially degrade water quality;

g) 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;

h. Place within a 100-year flood hazard area structures that would impede or redirect flood flows; and

i) 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 and/or inundation by seiche, tsunami, or mudflow.

Federal, State and local drainage laws and regulations govern the evaluation of impacts on surface water drainage. For this evaluation, impacts on surface water drainage would be considered significant if the Project would violate a water quality standard or waste discharge requirement, substantially deplete groundwater supplies, alter the drainage patterns of the site, which could result in substantial erosion, siltation, or increased runoff that could increase flooding, contribute runoff water that would exceed the capacity of existing or planned storm drain systems, degrade water quality, place housing in a 100-year floodplain, or expose people or structure to an increased risk of flooding as a result of the failure of a dam or levee.

4.9.4 IMPACT ANALYSIS AND MITIGATION MEASURES

ANALYTIC METHOD

The qualitative analysis in this section focuses on potential Project impacts to regional and on-site hydrology and water quality, including an analysis of impacts on both surface waters and groundwaters. In addition, this section analyses the potential hazards associated with floods and floodplain management as they relate to the Project site and its regional setting. The information in this section is based upon reviews of previously prepared reports documenting environmental investigations at the Project site, as well as other similar environmental documentation prepared for similar projects. In determining the level of significance, the analysis assumes that the construction and operation of the proposed Project would comply with all applicable federal, State, and local laws and regulations. The EIR analysis is based on review of available documents, including the proposed Specific Plan and associated tract maps, as well as Project-specific technical studies contained in Appendix G, *Hydrology Studies.*

PROJECT DESIGN FEATURES AND EXISTING REGULATIONS, RULES, AND REQUIREMENTS

Section 3.4.3 of the Specific Plan includes Development Standards for the design and implementation of on-site drainage facilities. These include:

1) The Project shall conform to all of the requirements imposed by the Riverside County Flood Control and Water Conservation District Hydrology Manual, the requirements of the City of Banning's adopted Storm Water Ordinance (Title 13 of the Municipal Code), the requirements of the Whitewater River Watershed Stormwater Management Plan, and the NPDES General Construction Permit.

2) The Project has incorporated a comprehensive drainage, water quality, groundwater recharge and biological resource mitigation program into the site, consisting of the surface drainage system, water quality basins, North Basin, realigned Smith Creek, recharge basins, and Smith Creek culvert improvements. This will reduce stormwater runoff volume and velocity, improve stormwater runoff water quality during storm events and low-flow irrigation volumes, improve groundwater

recharge, and create biological resource habitat. Key system features are summarized in Section 3.4 of the Draft Butterfield Specific Plan, and draft TTMs on file at the City, and are briefly summarized below.

Butterfield Specific Plan Master Drainage System[14]

The Butterfield Specific Plan proposes a backbone system of drainage improvements which will utilize the capacity of both Smith Creek and Pershing Channel to contain and transport surface flows from and through the Project site in its developed condition. The backbone system will also direct first-flows or nuisance flows toward water quality features that will treat the runoff before it enters these drainage courses. It is anticipated that grading for the proposed Project will elevate the building pads so that they are no longer impacted by flooding due to sheet flow and that such flows originating off-site will be captured and directed safely through the project site as part of the overall Project drainage. In addition, following its realignment, the 100-year flood plain of Smith Creek will be contained entirely within the open space/golf course. Pad elevations at the edge of the golf course will be set above the floodplain elevation to further protect structures. Basin and channel features, integrated with the realigned Smith Creek, will help regulate the volume and velocity of flows so as to protect the Project site from inundation. The primary features of the proposed Master Drainage System are identified and described below and are illustrated in Exhibit 3.0-7, *Master Drainage Plan*, in Section 3.0, *Project Description*, of this EIR.

- **North Basin**
  As indicated above, Smith Creek will be realigned as it traverses the Project site so that it flows through the Project's golf course. A large detention basin (North Basin) would be constructed within Planning Area 71 where Smith Creek enters the Project site. The basin will be designed to detain upstream flows to reduce the peak volume of flows that will be conveyed through the Wilson Street culvert. The North Basin would include a desilting basin for upstream flows, a weir to capture accumulated debris, and a detention basin to receive overflow from the desilting basin. The basin may also be used to store recycled water. Water held in the North Basin is expected to be used to recharge the underlying Beaumont Groundwater Basin.

- **Golf Course Drainage System**
  The backbone of the on-site drainage system is the realigned Smith Creek channel that will traverses the golf course. During significant storm events overflow from the channel will be contained within the golf course fairways, extending the wetted perimeter of the channel and reducing storm flow velocity. Drop structures designed into the realigned Smith Creek channel will be utilized to further reduce storm flow

[14] Butterfield Specific Plan, Section 3.4.2, *Master Drainage System*, p 3-32.

velocity and protect the channel from erosion. Culverts will convey channel flows under the Project's streets as needed.

- **Water Quality Treatment**
  Low flow drainage (i.e., nuisance flows) and storm flows will be directed into water quality treatment facilities consisting of vegetated detention basins or vegetated flow-through swales, which will be located in the golf course areas, other open space areas, and residential areas. Additional Best Management Practices[15] (BMPs) will be implemented if required to improve the quality of stormwater runoff; refer to Exhibit 3.0-9, *Proposed Water Quality Infiltration Areas Map*, in Section 3.0 of this EIR.

Butterfield Groundwater Recharge Program

The Butterfield project includes a proposed on-site groundwater recharge system intended to provide a partial offset of the Project's additional demand for domestic potable water and to replenish groundwater supplies utilizing a combination of State Water Project (SWP) allocated to the City of Banning by the San Gorgonio Pass Water Agency, if and when available, as well as potentially surplus recycled water generated by the Project's proposed satellite wastewater treatment (if constructed) when a surplus is available and it can be acceptably blended with other available water sources. Use of recycled water for groundwater recharge in the Butterfield Specific Plan area would require the approval of and permits from the RWQCB, Santa Ana Region, because the Project site overlies the Beaumont Basin Management Zone. In addition, use of recycled water would be required to comply with California Department of Public Health Title 22 regulations. Bringing the supply of SWP water to the recharge system would be facilitated by a proposed pipeline extension from the existing San Gorgonio Pass Water Agency spreading grounds to the Project's Planning Area 71, where it would be stored in the proposed 15-acre North Basin, and it could be released into Smith Creek and spread to groundwater recharge areas located either adjacent to the North Basin or within the golf course open space. The reservoir within this basin will have a capacity of 290 acre-feet (AF), of which 145 AF will be dedicated to flood control/ stormwater control and 145 AF will be dedicated to the storage of recycled water and/or imported water supplies, if they become available[16]. Based on this design, the basin will be required to maintain at least 145 AF of storage capacity during the rainy season to ensure adequate flood protection to downstream properties.

[15] Volume-based BMP design applies to BMPs where the primary mode of pollutant removal depends upon the volumetric capacity, such as detention, retention, and infiltration basins. Flow-based BMP design applies to BMPs where the primary mode of pollutant removal depends upon the rate of flow thru the BMP, such as swales, sand filters, screening devices, and proprietary devices such as storm drain inserts. Source: California State Water Resources Control Board

[16] City of Banning, March 29, 2011. *Water Supply Assessment for Butterfield Specific Plan, pp 21.*

IMPACT ANALYSIS AND MITIGATION MEASURES

Impact 4.9-1: Water Quality

Threshold: *Would the Project result in violation of water quality standards or waste discharge requirements?*

Determination: Less than Significant

Impacts to surface water quality have the potential to occur during the Project's construction phases; in the interim condition when portions of the site are left fallow with temporary vegetative cover; and following construction of individual tracts through buildout of the community, when impacts related to siltation, sedimentation, and erosion (the transport of particulate matter into streams and rivers that change downstream hydrologic conditions and affect water flow and quality) are likely to decrease while impacts associated with urban runoff such as nutrients, oil and grease, organic compounds, pesticides, and gross pollutants that could change the chemical composition of downstream water bodies, which may affect plant and wildlife will become more prominent.

Impacts have potential to occur both on- and off-site during the course of construction, but would be limited to on-site impacts following the construction of off-site facilities. With the exception of Phase IA, when 60 percent of the site would be mass graded and construction started on off-site infrastructure, the Project will generate a mix of impacts occurring within the same timeframes: some related to urban runoff in developed areas, some related to project construction, and others related to erosion, siltation, and sedimentation in areas that are not yet developed with urban uses.

Impacts to groundwater quality have the potential to occur throughout the life of the project. The Project site is underlain by the Beaumont basin. The Project site, and in particular that portion of the site occupied by Smith Creek, is currently a recharge area for that basin and is the result of storm water or snow melt flowing through Smith Creek from higher elevations, ponding within the creek channel or in the channel's floodplain, and ponding outside of the immediate creek area due to sheet flow. The recharge function of Smith Creek will be retained and enhanced as the Project develops through the realignment of the creek, the construction of debris, detention, and water quality basins as well as anticipated containment of post-storm ponding within the golf course as the Project develops. The proposed use of recycled water for irrigation of landscape and the golf course will both introduce a new additional source of water to the site and increase the quantity of water available for groundwater recharge through on-site percolation, as would the potential import of SWP water to the proposed North Basin in PA 71. The discharge of recycled water into the Project recharge areas requires the Project Applicant to meet Individual Waste Discharge Requirements and Water Recycling

Requirements and obtain a Master Recycling Permit from RWQCB (see discussion in Section 4.14 Water Supply.

The Beaumont basin is an adjudicated groundwater basin. Pursuant to the Beaumont basin Judgment, the Court appointed a Watermaster which is the Court's special-master for the Beaumont Basin. The Watermaster collects data on water quality from the Appropriators and other cooperating agencies to monitor the Beaumont basin. The Watermaster monitors the water quality and levels of wells and storage throughout the Basin. This data allows the Watermaster to perform scientific and engineering analyses to ensure that the Watermaster's responsibilities which include maintaining and improving the water quality are fulfilled.

The City is allowed to pump up the basin's safe yield as determined by the Watermaster. The safe yield is a water management construct that describes the sustainable supply of a groundwater basin and is defined herein as the amount of water that can be withdrawn from a groundwater basin annual without producing an undesirable result, include degraded water quality. Because the proposed Project would not require the City to pump in excess of this safe yield and pumping would comply with the rules set forth by the Beaumont Basin Judgment, impacts to the Beaumont Basin's water quality are not anticipated.

Construction Phase – On-Site and Off-Site Infrastructure

Grading and excavation associated with construction of the proposed Project could result in violations of water quality standards due to erosion of exposed soils and subsequent deposition of particles and pollutants to drainage areas. In general, sedimentation is the primary source of water quality impacts during construction. Four phases of mass grading are anticipated as the Project develops, the first phase of which would involve the grading of approximately sixty percent of the Project site and the movement of over 4 million cubic yards (cy) of material, while the total mass grading effort is expected to involve the movement of approximately 6.2 million cubic yards of material; refer to Sections 3.0 (*Project Description)* and 4.7 (*Geology)* for a more complete discussion of site grading.

In addition to the proposed mass grading, rough grading for the construction of pads and streets, and fine grading to finish pads and prepare streets for paving would accompany the development of individual subdivisions within the Specific Plan area. Due to the significant amount of grading expected to take place, there could be potentially significant short-term construction impacts associated with water quality due to excessive siltation unless these are mitigated. These impacts could include excessive sediment entering the Smith Creek drainage and downstream environs, increased sediment load and/or turbidity within Smith Creek affect plant and animal life within the stream course, and introduction of new constituents into downstream waters, potentially changing downstream habitats.

Further, the construction phase of the Project would include the use of potentially hazardous and/or toxic chemicals and materials that could enter receiving waters in the event of accidental spill resulting in soil contamination or nuisance/storm flow contamination, improper handling, and improper storage. (Also see Section 4.8, *Hazards and Hazardous Materials* for a more complete description of potential hazards and associated mitigation measures).

Construction controls are separated from typical water quality management programming because the measures are temporary and specific to the type of construction. Construction of the proposed Project may require temporary construction dewatering if high groundwater occurs within areas located in existing drainages. Water quality impacts from short-term construction operations (including construction dewatering) could also consist of the discharge of pollutants such as sediment from grading operations, oil and grease from equipment, trash from worker and construction activities, nutrients from fertilizers, heavy metals, pathogens, and other substances. As noted, in California, it is the responsibility of the State's Water Resources Control Board and its regional boards to administer the State's NPDES Construction Storm Water Program. Coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity, Construction General Permit Order 2009-0009 DWQ, became effective on July 1, 2010[17]. This permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which must include erosion and sediment control best management practices (BMPs) that would meet or exceed measures required by the General Construction Permit, as well as BMPs that control hydrocarbons, trash and debris, as well as other potential construction-related pollutants. Erosion control BMPs are designed to prevent erosion, whereas sediment controls are designed to trap sediment once it has been mobilized. Prior to the issuance of grading permits by the City, a SWPPP would be developed as required by, and in compliance with, the General Construction Permit and the City of Banning requirements contained in Title 13 and Title 18 of the City's Municipal Code. In addition, a Notice of Intent (NOI) would be prepared and submitted to the RWQCB providing notification and intent to comply with the General NPDES Permit.

Implementation of construction-phase BMPs would prevent or minimize impacts to water quality and ensure that discharges during the construction phase would not cause or contribute to any exceedances of water quality standards in the receiving waters. BMP selection is ultimately guided by the *California Stormwater Best Management Practice Handbooks for Construction Activity*, *American Society of Civil Engineers Urban Runoff Quality Management*, and the *Water Environment Federation Manual of Practice No. 23 and 87*. BMPs may include, among others: soil binders, earth dikes and drainage swales, silt fence, sediment basin/trap, gravel bag berms, street sweeping and vacuuming, sand bag/straw bale barriers, vehicle and equipment cleaning, stabilized construction entrance, spill prevention and control, solid waste management, hazardous waste management, concrete waste management, catch basin inserts, good housekeeping practices, and sanitary septic water management. Preparation and

[17] http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

approval of a Project-specific SWPPP is a Project requirement to address construction-related water quality impacts.

Implementation and maintenance of construction phase water quality and erosion control BMPs in compliance with existing ordinances and regulations, including the NPDES Construction General Permit and the requirements of Title 13 (*Stormwater*) and Title 18 (*Grading*) of the City's Municipal Code, would ensure that potential Project construction phase impacts to water quality would be less than significant level by ensuring compliance with water quality standards and waste discharge requirements.

Operational Interim Phase - On-Site

Implementation of the Specific Plan ultimately involves the permanent conversion of existing undeveloped lands to urban and open space/recreational uses and would result in an increase in the amount of impervious surfaces, which would increase stormwater runoff generation and flows while also introducing pollutants (sediment, nutrients, oil and grease, organic compounds, pesticides, and gross pollutants) associated with urban uses, particularly from new and existing roadways, that could be carried in runoff and discharged into receiving waters.

While sedimentation is the primary source of water quality impacts during construction, it would not be considered a significant issue during post-construction and operation of the Project because most of the site would be paved or landscaped, which would stabilize soils for the long term. After construction and during the life of the proposed Project, non-point-source pollutants would be the primary contributors to potential water quality degradation. Non-point-source pollutants are washed by rainwater from rooftops, landscaped areas, streets, parking areas and other impervious surfaces into the on-site drainage system. Typical non-point-source pollutants associated with the proposed uses include maintenance and cleaning supplies, landscape materials and products (pesticides, herbicides, and fertilizers), oil, grease, and heavy metals from automobiles, and petroleum hydrocarbons from fuels. In particular, implementation of the proposed project could potentially contribute non-point-source pollutants into Smith Creek from the use of landscape materials and products (i.e., pesticides, herbicides, and fertilizers).

WQMP is the acronym for Water Quality Management Plan. A Project WQMP is a plan for managing the quality of stormwater or urban runoff that flows from a developed site after construction is completed and the facilities or structures are occupied and/or operational, as opposed to a SWPPP, which focuses on construction phase BMPs. A WQMP describes the Best Management Practices (BMPs) that will be implemented and maintained throughout the life of a project and is used by property owners, facility operators, tenants, facility employees, maintenance contractors, etc., to prevent and minimize water pollution that can be caused by stormwater or urban runoff.

Pursuant to the WQMP Guidelines for the Whitewater River Watershed area, the City of Banning and/or the Riverside County Flood Control District would be required to condition the proposed Project, and/or the individual components of the Specific Plan Project (i.e., proposed subdivision maps) to submit for review and approval a project-specific WQMP that incorporates site design BMPs such as minimizing impervious areas, maximizing permeability, minimizing directly connected impervious areas, creating reduced or "zero discharge" areas, and conserving natural areas to the extent feasible. In addition, the WQMP is required to: (1) incorporate applicable source control BMPs and provide a detailed description of their implementation; (2) incorporate treatment control BMPs and provide information regarding design considerations; (3) describe the long-term operation and maintenance requirements for BMPs; and (4) describe the mechanism for funding the long-term operation and maintenance of the BMPs.

The Master Drainage Plan and Land Development Plan for the Butterfield Specific Plan Project includes site design BMPs (refer to Exhibit 3.0-8 *Proposed Water Quality/ Infiltration Areas Map*), such as the development of a golf course, parks and related open spaces that maximize permeability, conserve or restore natural areas, and create reduced discharge areas. These site design BMPs would be implemented concurrent with the incremental development of the Specific Plan. In addition, the Project incorporates source and treatment controls such as water quality basins, detention basins and vegetated swales that would further enhance post-construction water quality to the maximum extent practical (i.e., the MEP standard) by allowing particle sedimentation prior to entry into the storm drain facilities and storm water infiltration to reduce pollutant loads. Other potential BMPs could be utilized to reduce impacts resulting from non-point source runoff from the golf course, such as avoiding over-application (e.g., tilling fertilizers into the soil rather than hydraulic application) and limiting runoff (e.g., applying surface dressing in several smaller applications, as opposed to one large application, or prohibiting fertilizers below the mean high water level).

Preparation, review and approval of one or more WQMPs for the proposed Project or increments thereof, and implementation of site-specific and site-appropriate post-construction BMPs, including those incorporated into the Project as part of the Master Drainage Plan, would ensure that post-construction water quality impacts in both the interim and long-term build-out conditions would be less than significant.

Impact 4.9-2: Drainage

Threshold: *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, and increase impervious surfaces, which could substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?*

Determination: Less than Significant with Mitigation Incorporated

The development of the proposed Project would alter existing drainage patterns through the realignment of Smith Creek and grading that would increase the amount of site area that would drain to Smith Creek as compared to existing conditions. In addition, implementation of the Project's Master Drainage Plan, as described in "Existing Conditions" and Land Development Plan, as described in Section 3, *Project Description*, would result in the diversion of sheet flow across the site into gutters, catch basins and detention facilities, that would capture floodwater from Smith Creek and limit the impacts of flooding to the proposed golf course, and would reduce flow velocity and detain upstream and downstream flows. However, the purpose of these alterations is to provide enhanced drainage capacity, eliminate the potential down stream impacts associated with increasing the amount of on-site impervious surface, and reduce flooding hazard both within the site and downstream. Accordingly, these would be considered beneficial impacts.

During the construction phases of the Project, short term alteration of drainage patterns would occur; however, these diversions would be managed pursuant to the Specific Plan's Drainage Plan Guidelines. Temporary detention basins would be constructed to meet detention requirements and earthen channels/berms would be used to divert and convey flows during construction phases. These measures would ensure that temporarily diverted flows associated with construction activity would not result in on-site or off-site downstream flooding.

Accordingly, while the proposed Project drainage improvements, including off-site grading and construction of the debris/desilting basins would alter the existing drainage patterns, implementation of these improvements would ultimately allow for optimal drainage throughout the site and would offer improved stormwater flow downstream of the Project area. To ensure that compliance with the Specific Plan's Drainage Plan Guidelines, Mitigation Measure HWQ-1 identifies specific requirements associated with subsequent Tentative Tract maps, site plans, grading plans, and improvement plans prior to issuance of applicable permits. Adherence to these requirements will result in a less than significant impact.

Mitigation Measures

The following mitigation measure will ensure that impacts associated with the project are less than significant. Potential adverse Project effects are also "mitigated" through the various existing regulations and ordinances noted above. In addition, the Project has reduced, avoided or offset potentially adverse impacts through Project Design Features noted above (all of which are summarized in Section 3.7, *Project Design Features*):

HWQ-1: The following measures shall be reflected in applicable Tentative Tract Maps (TTMs), site plans, grading plans, and/or improvement plans to the satisfaction of the City Engineer, prior to applicable plan/permit approval:

1) All building pads within the Specific Plan shall be constructed so that they are free from flood hazard for the 100-year frequency storm by elevating finished floor elevations above the 100-year level of flood protection.
2) The depths of flow in the Project's streets shall not exceed top of curb elevations for the 10-year frequency storm event.
3) Streets shall be oriented to allow for maximum potential conveyance of regional flooding during significant storm events to expedite the passage of storm flows through the Specific Plan area.
4) The Specific Plan will be phased so that 100-year flood protection is ensured in all areas of development. Interim improvements (such as temporary debris basin, earthen channels/berms, check dams, sand bag barriers, or other temporary BMP and flood protection measures; refer to Mitigation Measure HWQ-1, bullet #6 and 7, below) shall be provided as development progresses to protect against flooding, erosion, siltation, and water quality impacts.
5) All subdivisions implemented as part of the Specific Plan shall be required to detain any incremental increase in drainage within the Project Boundary until the Riverside County Flood Control and Water Conservation District Master Drainage Plan ("Banning" – Zone 5) is fully implemented downstream of the Project site.
6) Construction of each phase shall include an assessment of the size and flow patterns of the adjacent undeveloped areas of the Specific Plan site. Interim phase on-site facilities shall provide developed phases with required flood protection pursuant to Code.
7) Temporary basins shall be constructed to meet detention requirements and earthen channels/berms shall be used to divert and convey flows during construction phases.

Impact 4.9-3: Runoff Capacity

Threshold: *Would the project 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?*

Determination: Less than Significant

As discussed previously, future development facilitated by implementation of the proposed Project, including both on-site and off-site infrastructure, would result in changes to the absorption rates, drainage patterns, and the corresponding rate and amount of surface runoff of the existing Project area. The proposed land uses would be located in previously undisturbed areas, and would result in new impervious surfaces that would generate additional stormwater

flows. However, site development resulting from the implementation of the Specific Plan would include upgrades to drainage and stormwater facilities that would either prevent site development from causing an exceedance of existing downstream drainage system capacity or result in an increase in that capacity (as, for example, increasing the size of the Smith Creek culvert under Wilson Street). As indicated in Appendix G, *Hydrology Studies*, peak flow rates within the Smith Creek and Pershing Channel culverts beneath Wilson Street are estimated to be 3,518 cubic feet per second (cfs) and 946 cfs, respectively under existing conditions. Under the proposed condition, these flow rates are reduced to 3,413 cfs and 740 cfs, respectively. Based on these studies, the proposed project would not increase runoff capacity when compared to existing conditions.

While the development of the site would introduce urban uses into a currently undeveloped area with corresponding increases in potential pollutants that could impact storm water runoff from the site, water quality BMPs implemented pursuant to existing regulations, previously described in Impact Analysis 4.9-1, would reduce these impacts to a less than significant level in the construction phase, interim development phase, and final build out phase of the Project. Accordingly, Project impacts relative to flood control system capacity and water quality would be less than significant.

Impact 4.9-4: 100-Year Flood Hazard Areas

Threshold: *Would the project 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?*

Determination: Less than Significant with Mitigation Incorporated

As indicated on Exhibit 4.9-2, *Flood Hazards Map*, a portion of the proposed Project is currently located within a mapped 100-year floodplain.[18] The main areas of the Project site susceptible to flooding are along Wilson Creek and the area south of the SCE easement. In addition, areas adjacent to Wilson Creek are subject to sheetflow conditions. Pursuant to the Project's Master Drainage Plan and Master Grading Plan, all building pads within the Specific Plan would be constructed so that they are free from flood hazard for the 100-year frequency storm by elevating finished floor elevations above the 100-year level of flood protection (refer to Mitigation Measure HWQ-1, above). The project site will be designed to effectively drain the Project area into Smith Creek and/or Pershing Channel and will include improvements that would reduce the potential for flooding due to sheet flow or flash flood conditions. The main purpose of the backbone drainage system proposed for the project is to ensure that effective drainage is provided throughout the development further reducing the potential risk associated with flooding.

[18] City of Banning Comprehensive General Plan and Zoning Ordinance EIR, Exhibit III-16, *Terra Nova Planning, Inc.*, 2005

As part of the Tentative Tract Map process (currently underway for this Project), the Applicant will be required to request a Conditional Letter of Map Revision (CLOMR) from FEMA, to revise the FEMA flood plain maps within the Project area. The request for a CLOMR would be supported by detailed flood hazard analyses prepared by a qualified Registered Professional Engineer in accordance with Part 65 of the NFIP regulations and the FEMA MT-2 application forms package. Once the Project has been completed (constructed), a revision to the FEMA Flood Insurance Rate Map (FIRM) to reflect the "As-built" condition would be requested. Accordingly, the development of the Project would not result in the placement of structures within the 100-year flood plain and there would be a less than significant impact with implementation of Mitigation Measure HWQ-1.

Impact 4.9-5: Flooding

Threshold: *Would the project 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.*

Determination: Less than Significant with Mitigation Incorporated

The Project site is not located within the mapped inundation area of any dam. There are no levees on or near the site. Flood control facilities described in the "Existing Conditions" portion of this Section, and discussed in previous impact discussions above (4.9-1, 4.9-2, 4.9-3, and 4.9-4), would protect the Project site from flooding, including flash floods in Smith Creek.

The proposed North Basin at the northern end of the Project area is able to detain approximately 290 AF of runoff. According to the Backbone Drainage Study in Appendix G, this basin should be sized to accommodate 142.16 AF of runoff and sediment load during a 100 year storm event. This basin would capture the sediment yield and flows from 1,955 acres north of the Project area. In addition, the proposed backbone drainage system through the golf course area will include areas for storm drain detention, which in conjunction with the North Basin will prevent risk of exposure to flooding. As proposed the Project's backbone drainage facilities will mitigate the runoff under the developed condition that would potentially create flooding hazards. There is no significant basin failure hazard, as the basin will be excavated rather than creating a "dam" face (the basin would not fall under the jurisdiction of the State's Division of Safety of Dams), and flows would be detained within the downstream facilities along the golf course fairway.

Construction of each phase shall include an assessment of the size and flow patterns of the adjacent undeveloped areas of the Specific Plan site. Interim phase onsite facilities shall provide developed phases with required flood protection pursuant to Code. Temporary basins shall be constructed to meet detention requirements and earthen channels/berms shall be used to divert and convey flows during construction phases (refer to Mitigation Measure HWQ-1).

Accordingly, impacts would be less than significant with implementation of Mitigation Measure HWQ-1.

Impact 4.9-6: Inundation by Seiche, Tsunami, or Mudflow

Threshold: *Would the project be subject to inundation by seiche, tsunami, or mudflow?*

Determination: Less than Significant

Seiche is an oscillating wave in an enclosed body of water that is usually a result of seismic or atmospheric disturbances. Tsunamis are very large ocean waves that are caused by an underwater earthquake or volcanic eruption and often cause extreme destruction when they strike land. The proposed Project area is not located on or near the coast or a large body of water. Therefore, it would not be subject to seiche wave action or tsunami hazards.

A mudflow is a downhill movement of soft, wet, unconsolidated earth and debris, made fluid by rain or melted snow and often build up great speed. These types of hazards typically occur in areas of topographic relief. Due to the topography of the Project area, particularly in the foothill areas along the northern perimeter of the Project area, there are potential hazards related to mudflow.

The specific Planning Areas in the proposed Project that would be of concern in this regard include PAs 50, 51, 52, 60, and 61. These PAs are surrounded by undeveloped open space areas (steep canyons) to the east, in which the threat of mudflow during significant storm events could be a factor; however, Project design includes several debris/detention basins along the northeastern perimeter of the Project area. These basins would serve to mitigate impacts related to mudflow that could occur with major storms by capturing any sediment and debris that may be generated in these off-site areas and preventing these materials from being transported into the planning areas adjoining these undeveloped areas to the east. In addition, compliance with flood control measures imposed by regional and local agencies, as well as implementation of the Butterfield Specific Plan Drainage Plan, would further reduce the impacts associated with mudflow, to a less than significant level. As recommended in the Project's geotechnical reports (Appendix E) during mass grading activities, geotechnical stabilization would occur on the periphery of the Project area within open space areas, and would be graded appropriately to reduce mudflow susceptibility. For additional discussion, please refer to Section 4.7, *Geology, Soils and Seismicity*.

4.9.5 CUMULATIVE IMPACTS AND MITIGATION MEASURES

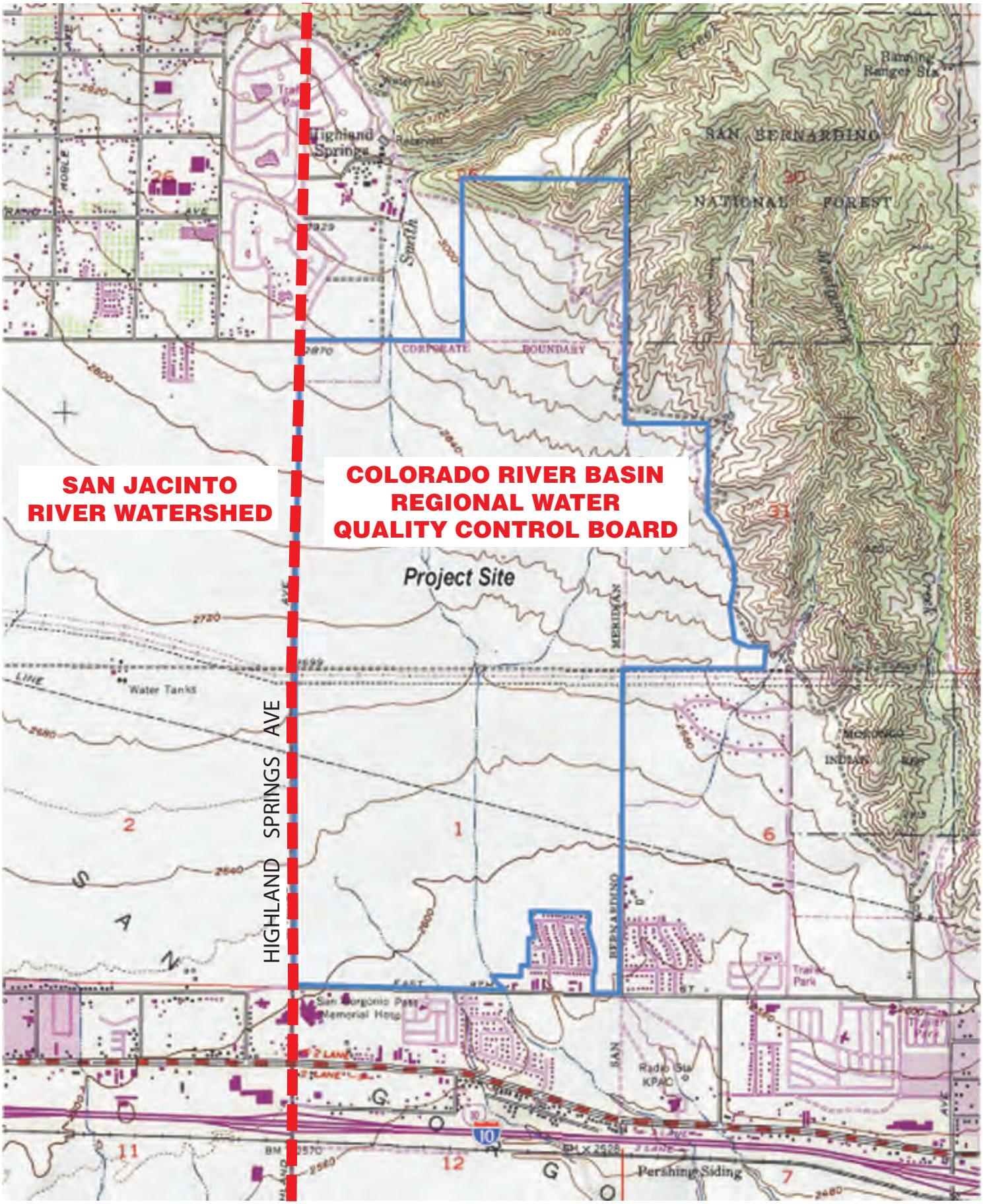
Determination: Less than Significant with Mitigation Incorporated

Cumulative impacts to hydrology and water quality are impacts that would result from incremental changes that degrade water quality or contribute to drainage and flooding problems within the Banning area. The City of Banning's *General Plan EIR* notes that the construction of development resulting from implementation of the City's *General Plan* would eventually contribute to increased runoff generated in the entire General Plan Study Area, in which the proposed Project is included, and proposed Mitigation Measures to reduce these impacts to a less than significant level.

Although the proposed Project in combination with other cumulative projects in the Banning area represents an incremental change in regional drainage patterns and additional developed surfaces, the proposed Project as well as other cumulative projects are required to construct a number of on- and off-site facilities that would mitigate cumulative drainage and flooding conditions, as well as mitigate potential water quality impacts, as discussed throughout this section. With the Project Design Features proposed to mitigate potential impacts to hydrology and water quality and the regulatory requirements applicable to all development within the Banning area, the proposed Project would not significantly contribute to cumulative or regional drainage or water quality impacts.

4.9.7 LEVEL OF SIGNIFICANCE AFTER MITIGATION

After incorporation of Project Design Features and compliance with existing regulatory requirements, the recommended mitigation measure in this section would reduce remaining hydrology and water quality impacts to a less than significant level.



MAP SOURCE: USGS 7.5 Min series topographic map, Beaumont Quadrangle (1988)

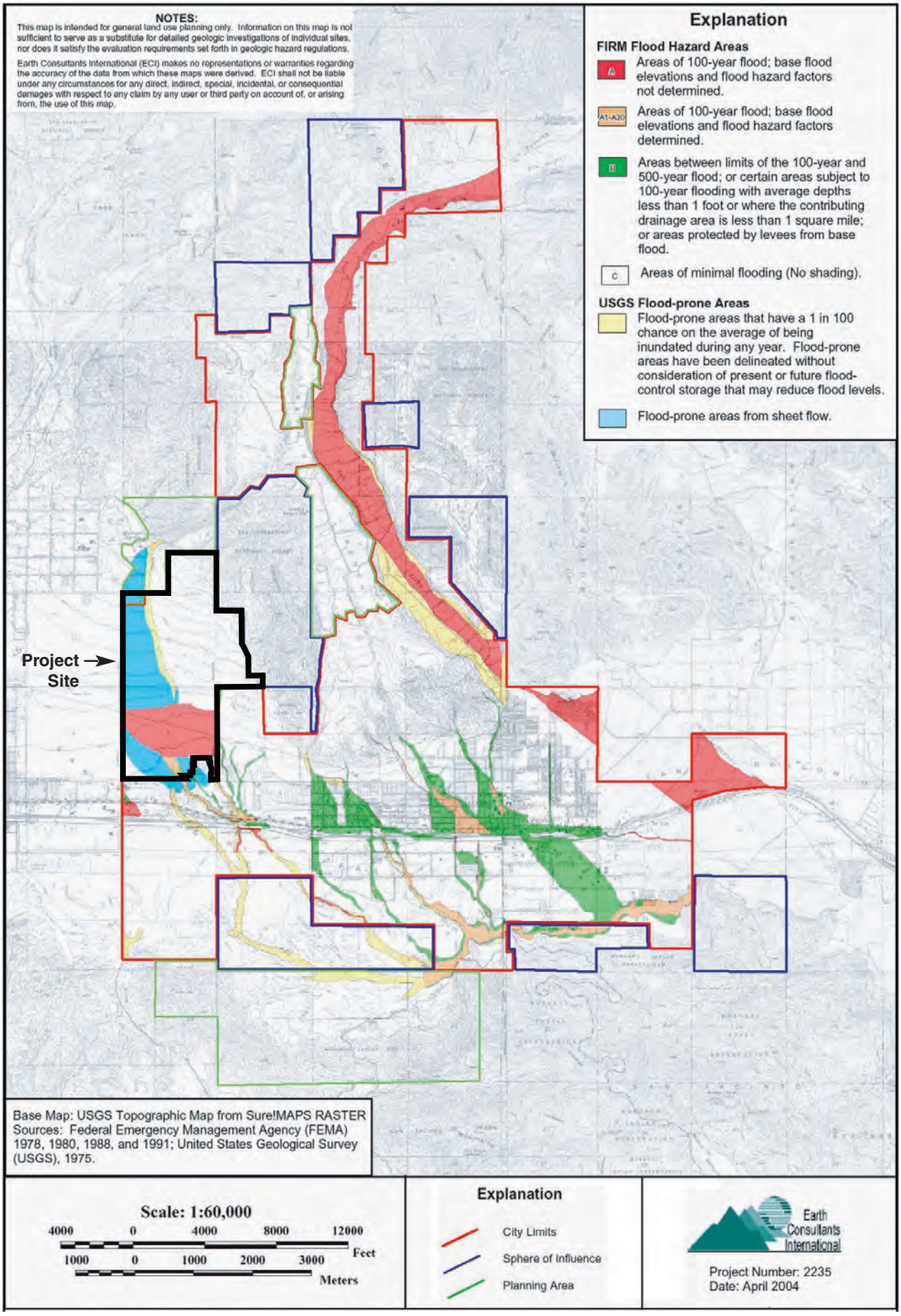
NOT TO SCALE

5/27/11 JN: 65-100290

PARDEE HOMES • BUTTERFIELD SPECIFIC PLAN EIR

Regional Board Jurisdictional Boundary

EXHIBIT 4.9-1



SOURCE: City of Banning General Plan, 2006 (Exhibit V-5)

PARDEE HOMES • BUTTERFIELD SPECIFIC PLAN EIR

NOT TO SCALE

Flood Hazards Map

RBF CONSULTING

5/27/11 JN: 65-100290

EXHIBIT 4.9-2