CHAPTER 13

HYDROLOGY AND WATER QUALITY

13.0 HYDROLOGY AND WATER QUALITY

This chapter characterizes the current environmental setting, describes the proposed project's potential impacts on hydrology and water quality in the study area, and presents proposed and recommended mitigation measured to offset the impacts.

13.1 ENVIRONMENTAL SETTING

The Riolo Vineyard Specific Plan (RVSP) Area (also referred to as specific plan area or Plan Area) is located in West Placer County approximately 2½ miles southwest of the City of Roseville. The Plan Area consists of 525.8 acres located immediately to the north of the Sacramento County line in unincorporated Placer County. The Plan Area is bounded by Walerga Road on the east, PFE Road on the south, Watt Avenue on the east, and Dry Creek on the north.

13.1.1 Groundwater Resources

Regional Groundwater

The Plan Area is located within the North American groundwater subbasin of the Sacramento Valley groundwater basin, where abundant groundwater resources are pumped both regionally and locally. This groundwater basin covers a surface area of approximately 548 square miles and is bounded on the north by the Bear River, on the west by the Feather River and Sacramento River, and on the south by the American River. A north-south line extending from the Bear River to Folsom Lake forms the eastern boundary. Under natural or predevelopment conditions, groundwater in the region tended to flow in a general southwest direction, from the foothills toward the center of the Central Valley. From the late 1920s to the early 1940s, water levels fluctuated in response to changing precipitation trends. The basin was frequently full, with water levels rising above the ground to form a seasonal lake in the Natomas area of Sacramento County. As the use of groundwater increased, primarily due to agricultural development in south Sutter and west Placer Counties from the late 1940s through the 1950s, groundwater levels in the northern part of the basin declined rapidly. As groundwater levels declined, the direction of flow in the groundwater basin changed such that inflow to the basin from the surrounding rivers (induced recharge) was increased. But as the recharge rate increased, so did the groundwater pumping rate (resulting from increasing urban development in northern Sacramento County).

Groundwater levels continued to decline at a relatively steady rate through the droughts of 1976-77 and 1987-1992. The effect of the 1987-1992 drought on groundwater levels in most of the basin was, however, relatively minor, with 1990 groundwater levels about 5 to 10 feet lower than 1985 conditions. According to semi-annual well data collected by the California Department of Water Resources (DWR) since the 1940s, the subsurface groundwater level in West Placer County in the area west of Roseville has been relatively stable since the early 1980s after decades of steady decline (MWH, 2005; Quad Knopf, 2006).

The water-bearing formations consist of the Riverbank and Turlock Lake/Laguna formation within the upper unconfined aquifer system and the Mehrten formation in the lower semi-confined aquifer system. These formations form a wedge that generally thickens from east to west to a maximum thickness of about 2,000 feet under the Sacramento and Feather Rivers. The aquifers are composed of lenses of interbedded sand, silt, and clay, interlaced with coarse-grained stream channel deposits that can store water. Due to the heterogeneous nature of the alluvial deposits, semi-confined conditions can be encountered at shallow depths within the aquifers. The base of freshwater occurs approximately 1,000 to 1,500 feet below ground surface (bgs) (MWH, 2005).

Total depths of domestic wells within this region are approximately 50 to 1,750 feet, with the average depth approximately 190 feet. Municipal/irrigation wells are approximately 77 to 1,025 feet, with the average depth approximately 396 feet. Yields from the municipal/irrigation wells range from 742 to 2,500 gallons per minute (gpm), with average yield approximately 800 gpm (DWR, 2006).

Studies completed by the Placer County Water Agency (PCWA) estimated the sustainable yield for the Placer County portion of the North American groundwater subbasin to be approximately 95,000 acre-feet per year (AF/yr) (MWH, 2005). Sustainable yield of a groundwater source is the average annual amount of water that can be pumped from the groundwater basin over a long period of time without impairing economic, social, and environmental values, and is approximately equal to the natural recharge of the basin. Historical groundwater use in Placer County by residences, farms, and businesses is estimated to be about 90,000 AF/yr. This historical use has been reduced in recent years to approximately 65,000 to 75,000 AF/yr due to the removal of agricultural land from production, changes in cropping patterns and irrigation techniques, and introduction of surface water supplies to serve urban development (Quad Knopf, 2006). This comparison suggests that there could be an excess in groundwater yield of approximately 15,000 to 25,000 AF/yr.

Local Groundwater Hydrology

Available groundwater well data from the DWR were reviewed. The estimated depth to groundwater in the vicinity of the Plan Area is about 100 feet bgs. The nearest well with long-term data is well number 10N05E12D001M, which is located less than one mile north of the site. Historical data for this well indicate that the depth to groundwater significantly declined from approximately elevation 20 feet mean sea level in the middle 1960s to about elevation -10 feet in the early 1980s (DWR, 2006; MWH, 2005). Water levels since the early 1980s through the early 2000s have remained fairly stable at about elevation -10 feet or about 115 feet bgs. Another well located near the eastern Plan Area boundary (well number 10N06E07L00M), has water level data for the period 1963 through 1974 (DWR, 2006 and MWH, 2005). Data for this well also shows a general decline in water levels over this period, with water levels about 5 feet higher than at well number 10N05E12D001M.

Based on data presented in the Western Placer Groundwater Storage Study (MWH, 2005), the general groundwater gradient direction in the vicinity of the Plan Area is towards the west.

In late 2002, the City of Roseville completed a production well in the Diamond Creek subdivision, about 9 miles northeast of the site, for backup supply purposes. Three monitoring wells of similar design were completed about one year later. The production well was completed to a total depth of 460 feet, with a screened interval between 310 and 450 feet. The static water level was at 108 feet and the well tested at about 2,700 gpm in a 24-hour test with a drawdown of 47 feet (QuadKnopf, 2006).

As discussed in Section 15.3, at least three domestic supply wells are known to exist in the project-level parcels and two are located on the Elliott Parcel (APN 023-221-005), a program-level parcel, four of which are confirmed to be active. The locations of these wells are shown on Figure 15-1. Information for each of these wells (e.g., depth, production capacity, completion details, and groundwater quality) is not available.

Due to the surface geologic conditions and soils that inhibit infiltration, the primary locations for potential groundwater recharge are along major watercourses. The predominant soils within the Plan Area are hydrologically classified as Group D and Group A soils, as defined by the U.S. Department of Agriculture Soils Conservation Service (SCS) (Civil Solutions, 2007: NRCS, 2006). Group D soils have an inherently high runoff potential (USDA, 1980), thus limiting recharge potential. Group A soils have high infiltration rates; these soils generally are located adjacent to Dry Creek within its floodplain.

Also see Chapter 14, Public Services and Utilities, for a discussion on groundwater use.

13.1.2 Groundwater Quality

Most of the North American groundwater subbasin has good water quality; however, localized portions may have marginal water quality due to natural variability in the aquifer and/or potential contamination from spills (DWR, 2006). There are three major types of groundwater within this region: magnesium calcium bicarbonate, or calcium magnesium bicarbonate; magnesium sodium bicarbonate, or sodium magnesium bicarbonate; and sodium calcium bicarbonate, or calcium sodium bicarbonate (DWR, 2006). These groundwater types may have elevated levels of total dissolved solids (TDS), chloride, sodium, bicarbonate, boron, fluoride, nitrate, iron, manganese, and arsenic in some locations. In the Dry Creek watershed, the groundwater is likely to be free from these elevated constituent levels, and no saline return flow of irrigation water is expected (U.S. Geological Survey, 1995 as cited in QuadKnopf, 2006)). Median specific conductivity is about 390 microsiemens per centimeter (µS/cm) (min = 159, max = 2270) (U.S. Geological Survey, 2001 as cited in QuadKnopf, 2006).

There are a few large areas of groundwater contamination due to land use activity. The closest area to the Dry Creek watershed is a plume associated with the Union Pacific Roseville Rail Yard (Quad Knopf, 2006). Smaller areas of groundwater contamination are also dispersed throughout the basin.

13.1.3 Hydrology

Regional Hydrology

The Plan Area is located within the Sacramento River basin, which extends from the Sierra Nevada range on the east to the Coast Range and Klamath Mountains on the west, and south to the confluence with the San Joaquin River. The entire Sacramento River basin covers 27,210 square miles (RWQCB, 2004).

The Plan Area is located in Placer County within the Dry Creek watershed, which drains approximately 101 square miles (see Figure 13-1) (Placer and Sacramento Counties, 2003). The watershed begins west of Auburn and drains into Steelhead Creek (also known as the Natomas East Main Drainage Canal [NEMDC]). Flows from Steelhead Creek discharge to the American River and ultimately discharge into the Sacramento River. The total area that contributes runoff to Steelhead Creek is approximately 180 square miles, of which approximately 56 percent is drained by Dry Creek (DWR, 2003).

The climate in the study area is classified as temperate and sub-humid. Summers are typically dry with abundant sunshine, and winters are mild with moderate to heavy precipitation. Approximately 80 percent of the annual precipitation occurs from November through March. The average annual precipitation in the southwestern part of Placer County is approximately 20 to 25 inches (Placer and Sacramento Counties, 2003).

Dry Creek flows year-round. Summer base flows are sustained by irrigation runoff, groundwater discharge, and treated sewage effluent from water treatment plant facilities (Placer County Planning Department, 1990; Placer and Sacramento Counties, 2006). Dry Creek streamflows are measured at a U.S. Geological Survey (USGS) gaging station (Station No. 11447293) at the Vernon Street Bridge in Roseville; this station has a period of record beginning in 1996. The maximum annual peak flow measured at the USGS gaging station between October 1996 and September 2005 was 7,950 cubic feet per second (cfs) on January 22, 1997 (USGS, 2006). Prior to installation of this gaging station, a river stage flood alert gage (California Data Exchange Center (CDEC) Station ID VRS) was used to monitor the river stage in Dry Creek. The maximum river stage measured at this station was 132.2 feet on January 10, 1995 (DWR, 2006b).

Mean monthly flows for Dry Creek are summarized in Table 13-1. Summer flows are low, typically less than 50 cfs, and composed primarily of groundwater seepage, residential and industrial waste water, and flow from the Dry Creek Wastewater Treatment Plant (WWTP) in Roseville. Discharges from the Dry Creek WWTP (see Table 13-2) have minimal impacts during the wet winter months when discharge from the plant is low compared to the flows in the creek (on the order of less than 20 percent). However, during the summer/fall when the creek flows are low, the plant discharge can be more than 50 percent of the total flow in the creek (Placer and Sacramento counties, 2003). The permitted discharge from Dry Creek WWTP is 18 million gallons per day (mgd) or approximately 28 cfs.

Table 13-1
Mean Monthly Dry Creek Flows at the Vernon Street Bridge

Year	Monthly Mean Flow (cubic feet/second)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	22.6	32.8	26.7	NA
2000	272	591	173	84.7	56.9	24.3	17.1	16.0	29.8	54.2	27.7	27.5	111
2001	88.2	164	108	112	33.2	19.6	12.2	12.6	23.3	17.1	50.4	166	67
2002	144	79.5	127	52.4	63.8	18.8	13.8	16.2	18.1	16.6	33.5	166	63
2003	80.4	76.3	86.2	122	84.5	24.1	11.0	27.4	17.3	16.6	34.3	144	60
2004	118	231	94.5	36.1	20.3	12.7	9.7	12.6	17.4	57.6	74.7	172	70
2005	236	111	198	74.4	75.5	40.0	15.0	15.3	23.9	NA	NA	NA	NA
Mean	157	209	131	80	56	23	13	17	22	31	42	117	74

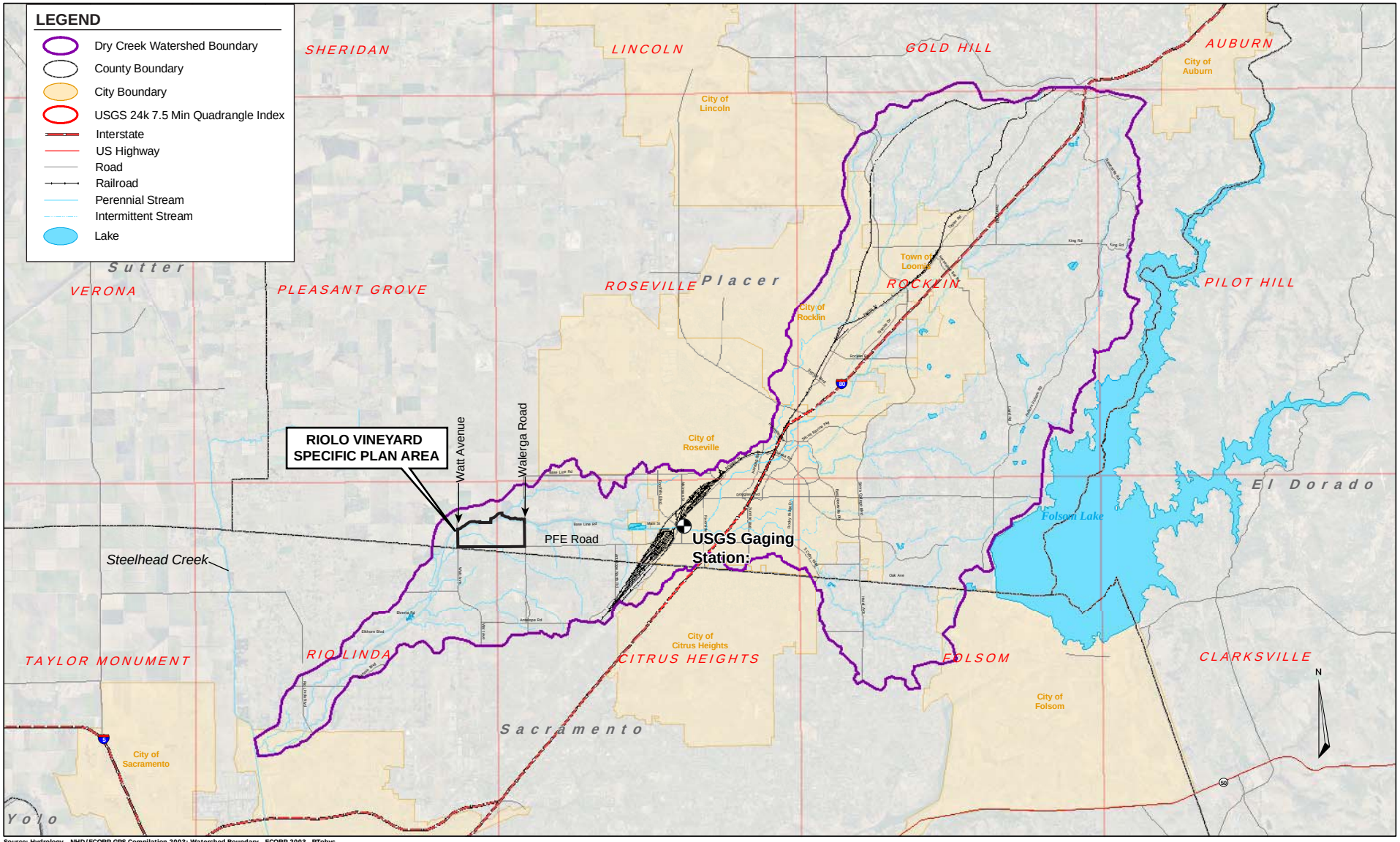
Source: USGS, 2006
Note: NA = not available. Prior to October 1999, streamflow data are incomplete and monthly mean flows were not computed.

Table 13-2
Mean Monthly Treated Effluent Discharge from the Dry Creek Wastewater Treatment Plant

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Dry Creek WWTP Discharge (cfs)	15.7	17.9	15.2	13.6	12.4	10.9	11.1	11.7	12.5	13.6	14.4	13.6	14
Percent of Dry Creek Flow	10%	9%	12%	17%	22%	47%	85%	69%	57%	44%	34%	12%	18%

Source: Placer and Sacramento counties, 2003
Note: cfs = cubic feet per second

A hydrologic study of the Dry Creek watershed was prepared for Placer County by James M. Montgomery (1992) to assess flood control needs for the watershed. Peak flows at various locations within the Dry Creek watershed were estimated for both 1989 and future conditions. Table 13-3 provides a summary of estimated peak flows for the 2-year, 10-year, 25-year, and 100-year events at several locations (Figure 13-1). In 1985, both the Walerga Road and Watt Avenue bridges on Dry Creek were overtopped and damaged (JMM, 1992).



Source: Hydrology - NHD/ECORP GPS Compilation 2003; Watershed Boundary - ECORP 2003. RTobys

Source:
Placer and Sacramento Counties, 2003.

0 2 4
Scale in Miles

N

DRY CREEK WATERSHED

January 2008
28066896

Riolo Vineyard Specific Plan EIR
Placer County, California

URS

FIGURE 13-1

1/11/08 vsa/hk ..\Riolo Vineyard\Graphics\EIR Jan 2008\F13-1_dry creek watershed_jan08.ai

Table 13-3
Estimated Peak Flows within Dry Creek Watershed

Location	Area (sq. mi.)	2-Year Peak Flow (cfs)		10-Year Peak Flow (cfs)		25-Year Peak Flow (cfs)		100-Year Peak Flow (cfs)	
		1989	Future	1989	Future	1989	Future	1989	Future
Dry Creek at Vernon Street	78.2	3,439	3,467	5,860	6,518	9,084	9,871	13,706	14,830
Dry Creek near Walerga Road	86.3	2,829	2,975	6,011	6,753	9,273	10,175	13,973	15,278
Dry Creek near Watt Avenue	90.9	2,828	3,039	6,038	6,786	9,300	10,209	14,007	15,331
Dry Creek at Steelhead Creek	101.0	NA	NA	NA	NA	NA	NA	NA	15,600

Sources: JMM, 1992; Placer County Flood Control and Water Conservation District, 1994
Note: The study estimated the flows for base and future conditions. The base conditions were developed using land use survey information from 1989. The future conditions were developed by modifying the base model for the *Placer County General Plan* Future condition. Locations are shown on Figure 13-1.

Historic flood events in the lower portion of the Dry Creek watershed occurred in 1986, 1995, and 1997 (Placer and Sacramento counties, 2006). Flooding due to rain may occur any time from October through May when prolonged heavy rainfall falls over a large area of the basin (including tributaries). The lower portion of Dry Creek is characterized by high peak flows of moderate duration. Flooding is exacerbated when heavy precipitation falls on already saturated ground. Flooding from cloudburst storms of high intensity can occur from late spring to early fall; however, runoff resulting from the summer storms tends to be significantly less in peak and volume.

Riolo Vineyards Site Hydrology

The site comprises 525.8 acres and is entirely within the Dry Creek watershed (Figure 13-1). The Plan Area has relatively flat topography. In general, the site slopes from south to north, from elevation 115 to 80 feet. The current land use within the Plan Area is predominantly agricultural. A forested riparian corridor exists along Dry Creek, which forms the northern boundary of the Plan Area (see Figure 13-2). The Walerga tributary joins Dry Creek from the north approximately 3,000 feet west of Walerga Road. The drainage area of the Walerga tributary is approximately 1.2 square miles. Another creek (referred to in this report as the Southern Tributary) flows through the Plan Area from the south to Dry Creek (see Figure 13-2). Approximately 187.5 acres of the Specific Plan Area drain to the Southern Tributary. The eastern (approximately 160.7 acres) and central (approximately 145.4 acres) portions of the Specific Plan Area drain as overland flow and through swales northwards toward Dry Creek. These swales are described in more detail in Section 13.1.4. A small portion of the site in the southwest corner (approximately 33.9 acres) drains southwest through culverts under PFE road and ultimately drains into Dry Creek downstream of Watt Avenue.

The predominant soil types present within the Plan Area are classified as SCS Group A and Group D (Civil Solutions, 2007; NRCS, 2006). Soil Group A is located primarily along the creeks and has a high infiltration rate when thoroughly wet. These soils have a moderate runoff potential and also provide recharge potential. Soil Group D is soil with very slow infiltration rates and therefore results in high runoff potential (JMM, 1992).

The Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Map (FIRM) Community Panel Numbers 06061C0458F and 06061C0459F delineate the 100-year floodplain within

the Plan Area. These maps have an effective date of June 8, 1998. A corrected effective 100-year floodplain model was developed by incorporating updated hydrographic information for the site into the FEMA model. In general, the floodplain areas in the study area are associated with Dry Creek and its tributaries. Both the FEMA-designated and corrected effective 100-year floodplains in the vicinity of the Plan Area are shown on Figure 13-3.

13.1.4 Surface Water Quality

The water quality in nearby streams is of concern for wildlife and fisheries as well as for other downstream uses. Stormwater runoff from rural and urban areas may contain excessive levels of pollutants (e.g., pesticides, herbicides, or hydrocarbons) that are toxic to fisheries and other aquatic life in the streams. In addition, runoff from the Plan Area eventually reaches the Sacramento River, a primary source of water for the City of Sacramento as well as for the Sacramento-San Joaquin Delta, which has numerous water uses such as water supply, recreation, fisheries, and wildlife habitats (JMM, 1992).

Stormwater runoff originating at the site drains to Dry Creek, which is tributary to the American River and Sacramento River. Key beneficial uses of the receiving waters are designated as municipal, domestic, and agricultural supply; recreation; and freshwater habitat (RWQCB, 2004).

Surface water quality can generally be characterized by surrounding land uses. The historical land use along Dry Creek has been primarily agricultural. Typical constituents that would be expected in runoff from agricultural lands would include nitrogen, phosphorus, and coliform bacteria. With recent urbanization within the watershed, additional constituents that would be expected include oil, grease, metals, pesticides, and herbicides. Table 13-4 summarizes typical concentrations of chemical indicators of pollutants according to land use that could be expected in stormwater runoff.

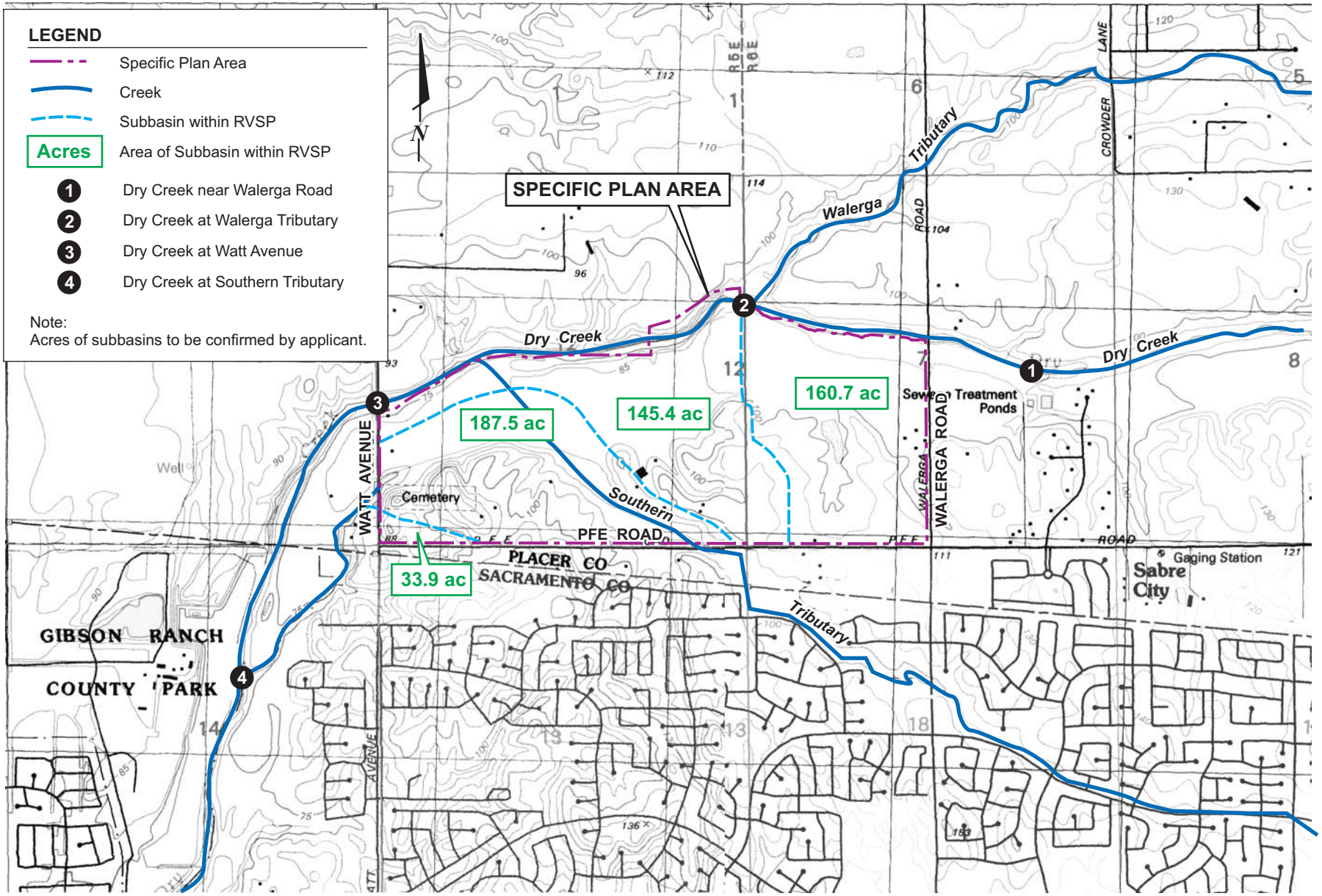
Table 13-4
Typical Concentrations of Nonpoint Source Pollutants in Stormwater

Land Use	Biological Oxygen Demand (BODs) (pounds/acre/year)	Suspended Solids (pounds/acre/year)	Total Phosphorous (pounds/acre/year)	Total Nitrogen (pounds/acre/year)
Residential	24	545	0.32	4.0
Commercial	98	745	0.75	9.0
Recreation	1.3	420	0.06 to 0.2	2.3 to 4.4
Cropland, pasture and unused rural land	2.1 to 30	420 to 10,000	0.09 to 0.64	0.9 to 23

Source: Dames & Moore, 1993

A water quality monitoring program was recently implemented within the Dry Creek watershed in support of the Dry Creek Watershed Coordinated Resource Management Plan (Placer and Sacramento Counties, 2003). Preliminary data generated by this program and other studies indicate the potential for water quality impairment throughout the watershed. Specifically:

- Summer temperatures could cause impairment in some reaches, which can be mitigated through restoring riparian vegetation to shade the streams. While not all measured temperatures exceeded temperatures for fish support, many reaches still experienced very high temperatures during the summer.



Source:
USGS 7.5 Series Topographic maps:
Rio Linda and Citrus Heights, CA (1992)
quadrangles

0 2000 4000
Scale in Feet
1:24,000

EXISTING HYDROLOGIC CONDITIONS

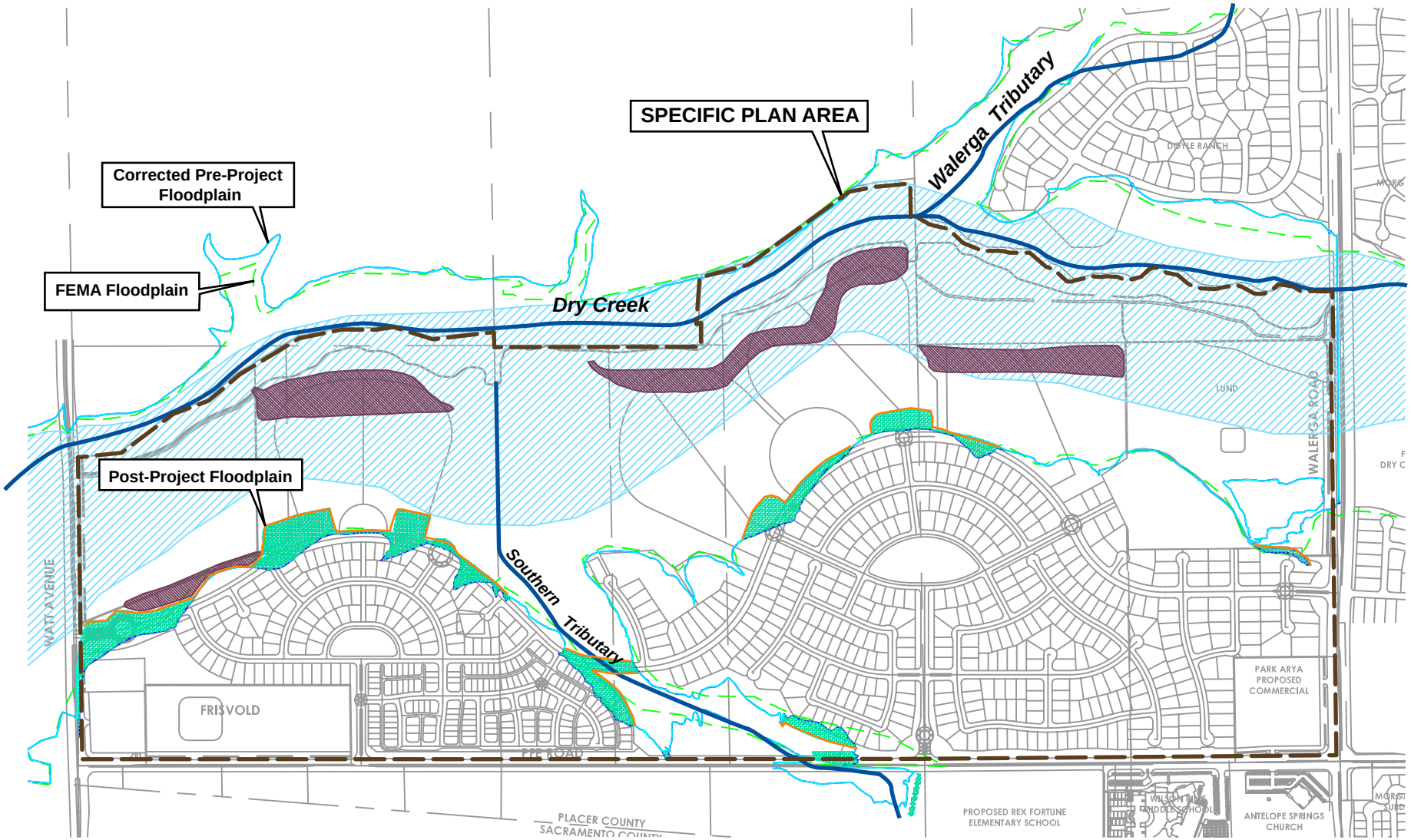
January 2008
28066896

Riolo Vineyard Specific Plan EIR
Placer County, California

URS

FIGURE 13-2

1/11/08 ..vsa/hk \Riolo Vineyard\Graphics\EIR Jan 2008\F13-2_ex hydro_jan08.cdr



Site plan shown is conceptual and subject to change with future Tentative Subdivision maps.

LEGEND

- Proposed Floodplain Fill Areas
- Proposed Floodplain Compensatory Storage Areas
- Floodway

Floodplain Limits:

- FEMA
- Corrected Pre-Project Floodplain - reflects updated topographic data for existing conditions
- Post-Project Floodplain

N

0 450 900

Scale in Feet

Source: Civil Solutions, 2007

FLOODPLAIN MAP

January 2008
28066896

Riolo Vineyard Specific Plan EIR
Placer County, California

URS

FIGURE 13-3

akatanic Sep 13, 2006 - 2:20pm T:\Riolo Vineyard\Sheets\Figure 13.dwg

1/11/08 vsa/hk ..\Riolo Vineyard\Graphics\EIR Jan 2008\F13-3_floodplain_jan08.ai

- Toxicity is indicated by either pesticides (Dry Creek) or heavy metals in sediment (Secret Ravine). Additional studies are necessary to determine extent and level of impairment.
- Excessive nutrient loads are indicated in the lower reaches of Dry Creek. These may be due to either the Roseville WWTP or agricultural drainage. Further study is necessary to determine actual source and impact.
- Turbidity is generally above the U.S. Environmental Protection Agency (EPA) recommended criteria within the Dry Creek watershed. Reduced erosion and bank erosion will help mitigate high turbidities.
- Fecal coliforms exceeded water quality criteria during the dry season. Identification of extent and sources will be necessary for determining effective mitigation strategies.
- Dissolved oxygen, conductivity (salinity), pH, ammonia, most metals, and most pesticides were within the limits for sustaining aquatic life.

Steelhead Creek is a potentially significant cumulative source of urban loads of drinking water contaminants to the Sacramento-San Joaquin Delta. Water quality monitoring was performed from 1997 to June 2002 (DWR, 2003). The monitoring site was on Steelhead Creek at the El Camino Avenue Bridge, just below the confluence with Arcade Creek. This location includes drainage from the entire 180-acre Steelhead Creek watershed, which includes drainage from Dry Creek. The California Bay-Delta Authority (formerly CALFED) specifically identified Steelhead Creek as a priority site for assessment of sources and loads of drinking water contaminants of concern, and, therefore conducted the water quality investigation as part of the Municipal Water Quality Investigations Urban Sources and Loads Project. Results indicated the following:

- TDS levels for water samples from Steelhead Creek ranged from 58 to 338 milligrams per liter (mg/L) and were higher overall than Sacramento area urban runoff, although the range of values was similar;
- Electrical conductivity (EC) was relatively high and ranged from 81 to 561 micrograms per liter (μg/L);
- Bromide levels were detected at levels above the Bay-Delta program target of concern of 0.05 mg/L for drinking water sources. Bromide levels averaged 0.054 mg/L, with a high value of 0.11 mg/L;
- Combined nitrate values were very high, often exceeding the maximum contaminant level (MCL) (10 mg/L as nitrogen). Of the total 64 combined samples, 22 exceeded the MCL, with high values of 22.8 mg/L and 16.3 mg/L; and
- Diazinon was detected in 9 of 14 samples ranging from <0.01 μg/L to 0.19 μg/L. These results are not unexpected due to the historically high concentrations and the level of concern about this pesticide in the Arcade Creek watershed.

Swales

URS biologists identified and mapped grassy swales totaling 15.65 acres within parcels owned or controlled by the Applicant during site visits in February and March 2006. None were identified on offsite areas. These swales consist of depressions that are seasonally inundated or saturated with water from surface runoff or flooding from adjacent channels.

Grassy swales were identified based on evidence of wetland hydrology, hydric soils, and vegetation. Grassy swales in the Plan Area were determined to be nonjurisdictional features. These features reflect changes to the normal hydrology due to the substantial precipitation events that occurred in February,

March, and April 2006 and the construction of a beaver dam subsequent to the original jurisdictional delineation of the Plan Area. These observations were discussed with the Corps project manager, who determined that the additional features would not be regulated by the Corps (Jones, 2006).

Several grassy swales are located adjacent to the channelized stream that conveys water from PFE Road north across the study area and discharges into Dry Creek. During the February and March 2006 site visits, these areas were inundated with several inches of water and exhibited hydric soils and hydrophytic vegetation. These areas may have been inundated as a result of beaver activity within the channelized stream that caused overbank flooding, coupled with rainfall conditions in early 2006 that substantially exceeded average rainfall. The beaver dam was not present during the original wetland delineation of the study area (Gibson & Skordal, 2006b). The U.S. COE concluded that the beaver dam created abnormal conditions. Therefore, the Corps does not consider the swales to be jurisdictional wetlands (Jones, 2006).[1] Historic aerial photography by Radman Photography from 1995, 1997, 2000, and 2002 (Skordal, 2006b) and the presence of hydric soils indicate that this site may have been inundated or saturated with water at times in the past due to similar beaver-related overbank flooding from the adjacent stream channel.[2] Other swales in the study area are located adjacent to jurisdictional wetlands and at isolated locations where surface runoff accumulates during and after winter rainfall events.

13.2 REGULATORY SETTING

13.2.1 Federal Regulations

Federal regulations pertaining to hydrology and water quality are described in this section.

Clean Water Act

The Clean Water Act is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which establishes the basic structure for regulating discharges of pollutants to waters of the United States. Section 303 of the Clean Water Act requires states to adopt water quality standards.

The U.S. Army Corps of Engineers (Corps) regulates the placement of fill or dredged materials that affect waters of the United States, which include stream courses and jurisdictional wetlands. The Corps regulates these activities under the authority of Section 404 of the Clean Water Act. The Corps would regulate any development in the vicinity of the Plan Area that affects jurisdictional wetlands. As part of the Nationwide 404 permit, coordination with United States Fish and Wildlife Service would be required.

National Flood Insurance Program

Pursuant to the National Flood Insurance Program (NFIP), FEMA develops flood risk data for use in insurance rating and floodplain management. Based on this data, FEMA prepares Flood Insurance Rate Maps (FIRMs) that delineate areas that are subject to inundation from a 100-year flood event (i.e., a flood that has a 1% chance of occurring in a given year). Participation in the NFIP provides an opportunity for

[1] URS received a verbal response to questions regarding wetlands adjacent to the channelized stream with the beaver dam in the Plan Area. A written confirmation has been requested.

[2] Subsequent to the mapping of these features, the beaver dam was removed in an attempt to reestablish the normal flow regime within the channels on the project site. Gibson & Skordal conducted a secondary site visit after the beaver dam was removed to determine if these features continue to function as wetlands. The site visit was conducted at a time when all other nontransient wetlands in the project vicinity were inundated (April 16, 2007). During the site visit, inundation within these features was not observed. In addition, the substrate was free from saturation to a depth of at least 18 inches. As a result, it appears that the inundation that created these features is no longer present (Placer County, 2007).

property owners in the community to purchase flood insurance, provided that the community complies with FEMA requirements for maintaining flood protection and managing development in the floodplain.

13.2.2 State Regulations

The Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act (Porter-Cologne) is the principal law governing water quality regulation in California. This statute established the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs), which are charged with implementing its provisions. Porter-Cologne establishes a comprehensive program for the protection of water quality and the beneficial uses of water. It applies to surface waters, wetlands, and groundwater and to both point and nonpoint sources. Porter-Cologne is found in the California Water Code beginning with Section 13000. In addition, Title 23 of the California Code of Regulations contains administrative and regulatory elements of water quality and quantity management in California. The SWRCB was formed in 1967 when the State Water Rights Board and the State Water Quality Control Board (SWQCB) were merged by the state legislature, based on the realization that decisions affecting water quality and water rights are inseparable. Under its dual legal authority, the SWRCB allocates rights to the use of surface water and, together with the nine RWQCBs, protects water quality in all waters of the state.

The Plan Area is located within Region 5—the Central Valley River Basin RWQCB. The SWRCB provides program guidance and oversight, allocates funds, and reviews RWQCB decisions. The RWQCBs have responsibility for individual permitting, inspection, and enforcement actions within each of nine hydrologic regions.

Porter-Cologne also incorporates many provisions of the federal Clean Water Act, such as delegation to the SWRCB and RWQCBs of the National Pollutant Discharge Elimination System (NPDES) permitting program.

NPDES Discharge Permits

Surface water quality is regulated by the NPDES program, developed by the U.S. EPA in accordance with Section 303 of the Clean Water Act. In California, the SWRCB administers the NPDES program, with implementation and enforcement by the RWQCB. The NPDES program, designed to protect surface water quality, is applicable to all discharges to waters of the United States, including stormwater discharges associated with municipal drainage systems, construction activities, industrial operations, and "point sources" (such as wastewater treatment plant discharges and other direct discharges to water bodies).

In April 2003, the SWRCB adopted an NPDES Phase II General Permit for the Discharge of Storm Water from small municipal separate storm sewer systems (MS4s) to provide NPDES permit coverage to municipalities that were not covered under the NPDES Phase I Rule for municipalities serving more than 100,000 people. Placer County is designated within the NPDES Phase II General Permit. Under this permit, stormwater discharges shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan, the California Toxics Rule, or the applicable RWQCB Basin Plan. For Placer County, the applicable Basin Plan is the Water Quality Control Plan for the Sacramento River and the San Joaquin River Basins (RWQCB, 2004). The Basin Plan establishes water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the basin, in compliance with the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act.

The SWRCB Water Quality Order 99-08-DWQ, "National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction Activity (General Permit)" authorizes a general permit for stormwater discharges associated with construction activities that disturb one or more acre. Construction activities subject to the permit include cleaning, grubbing, grading, stockpiling, and excavation activities. The General Permit requires submittal of a Notice of Intent (NOI) to comply with the permit and the development of a Storm Water Pollution Prevention Plan (SWPPP) that must address the following:

- Plans for implementation of structural and operational best management practices (BMPs) to prevent and control impacts to surface water during construction;
- Inspection and maintenance of BMPs throughout all phases of construction;
- Monitoring of runoff quality during all phases of construction; and
- A plan for preventing and controlling post-construction impacts to runoff quality.

The RWQCB Central Valley Region Order 5-00-175 "Waste Discharge Requirements General Order for Dewatering and Other Low Threat Discharges to Surface Waters" addresses potential discharges of low water quality-threat wastewater. Such discharges include (1) short duration (four months or less) or (2) low flow (average dry weather discharge does not exceed 0.25 million gallons per day). Types of discharges covered by this permit include the following:

- well development water,
- construction dewatering,
- pump/well testing,
- pipeline/tank pressure testing,
- pipeline/tank flushing or dewatering,
- condensate,
- water supply system, and
- miscellaneous dewatering and low-threat discharges.

The SWRCB regulates activities that could result in adverse impacts to groundwater quality. Policies and regulations promulgated by the SWRCB (either under its Clean Water Act authority or state-derived authority) are implemented and enforced by the Central Valley RWQCB. Groundwater-related activities governed by NPDES permits or Waste Discharge Requirements (WDR) issued by the Central Valley RWQCB include aquifer reinjection, reclaimed water irrigation, and siting and design of waste management facilities (including wastewater treatment plants). The Central Valley RWQCB also oversees local implementation of underground storage tank management programs and other programs related to prevent and control groundwater impacts.

In general, SWRCB policy prohibits degradation of groundwater quality, and in cases where impacts occur, the Central Valley RWQCB typically requires restoration of impacted aquifers such that residual concentrations do not exceed the U.S. EPA's MCLs for drinking water. In cases where the aquifer is hydraulically connected to a surface water body, water quality criteria for fresh water aquatic habitats may be imposed as standards for cleanup and restoration efforts.

The SWRCB and RWQCB regulate activities in waters of the United States through Section 401 of the Clean Water Act. A 401 Certification will be necessary to obtain a 404 permit for construction of wetlands/habitat where waters of the United States are impacted.

The California Department of Fish and Game's Lake and Streambed Alteration Program (California Fish and Game Code Section 1600-1607) requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream,

or lake or that will use materials from a streambed to notify the Department before beginning the project. Notification is generally required for any project that will take place in or in the vicinity of a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish or other aquatic life and watercourses having a surface or subsurface flow that support or have supported riparian vegetation.

13.2.3 Local Regulations

The Placer County Flood Control and Water Conservation District (PCFCWCD) formulates regional strategies for flood control management. In the PCFCWCD Stormwater Management Manual, policies, guidelines, and specific development criteria are presented for stormwater management. The main objectives of the district are to verify compliance of Placer County projects with the criteria of the Stormwater Management Manual, implement flood control projects identified in their master plans, and implement water conservation efforts as identified in their master plans.

Local regulations relevant to water quality with respect to erosion and sediment discharge control include the Placer County Grading and Erosion Prevention Ordinance (Article 15.48) and the Placer County General Plan (see below). The Placer County Grading Ordinance specifies permitting requirements and establishes design standards for drainage and erosion/sediment control. The Placer County Land Development Manual (LDM) provides additional details on developing and designing erosion/sediment control features and contains a storm drainage section that supplements the Stormwater Management Manual. The relevant elements of the LDM's storm drainage section must also be included in a stormwater management project. Grading plans must be designed to address long-term erosion and sediment control, and must include measures to be implemented to control erosion and prevent offsite discharge of sediments during construction activities such as grading and stockpiling of soils. An erosion and control plan showing all facilities and measures to be implemented to control erosion and prevent offsite discharge of sediment must be submitted for review and approval by the Engineering and Surveying Director.

The Placer County Flood Damage Prevention Ordinance (Article 15.52) addresses floodplain management. The ordinance limits construction within the 100-year floodplain to prevent damage to structures and to limit the effect of development on base flood elevations.

Placer County General Plan

The *Placer County General Plan* contains goals and policies governing development within Placer County. The goals listed below summarize the priorities of the General Plan related to hydrology and water quality. The proposed project's consistency with applicable General Plan policies is evaluated in Appendix D. General Plan policies and goals applicable to the proposed project include the following:

Stormwater Drainage

Goal 4.E To collect and dispose of stormwater in a manner that least inconveniences the public, reduces potential water-related damage, and enhances the environment.

Policy 4.E.1 The County shall encourage the use of natural stormwater drainage systems to preserve and enhance natural features.

Policy 4.E.2 The County shall support efforts to acquire land or obtain easements for drainage and other public uses of floodplains where it is desirable to maintain drainage channels in a natural state.

Policy 4.E.4 The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County Land Development Manual.

Policy 4.E.5 The County shall continue to implement and enforce its Grading Ordinance and Flood Damage Prevention Ordinance.

Policy 4.E.6 The County shall continue to support the programs and policies of the watershed flood control plans developed by the Flood Control and Water Conservation District.

Policy 4.E.8 The County shall consider recreational opportunities and aesthetics in the design of stormwater ponds and conveyance facilities.

Policy 4.E.9 The County shall encourage good soil conservation practices in agricultural and urban areas and carefully examine the impact of proposed urban developments with regard to drainage courses.

Policy 4.E.10 The County shall strive to improve the quality of runoff from urban and suburban development through use of appropriate and feasible mitigation measures including, but not limited to, artificial wetlands, grassy swales, infiltration/sedimentation basins, riparian setbacks, oil/grit separators, and other best management practices (BMPs).

Policy 4.E.11 The County shall require new development to adequately mitigate increases in stormwater peak flows and/or volume. Mitigation measures should take into consideration impacts on adjoining lands in the unincorporated area and on properties in jurisdictions within and immediately adjacent to Placer County.

Policy 4.E.12 The County shall encourage project designs that minimize drainage concentrations and impervious coverage and maintain, to the extent feasible, natural site drainage conditions.

Policy 4.E.13 The County shall require that new development conforms with the applicable programs, policies, recommendations, and plans of the Placer County Flood Control and Water Conservation District.

Policy 4.E.14 The County shall require projects that have significant impacts on the quantity and quality of surface water runoff to allocate land as necessary for the purpose of detaining post-project flows and/or for the incorporation of mitigation measures for water quality impacts related to urban runoff.

Policy 4.E.15 The County shall identify and coordinate mitigation measures with responsible agencies for the control of storm sewers, monitoring of discharges, and implementation of measures to control pollutant loads in urban storm water runoff (e.g., California Regional Water Quality Control Board, Placer County Division of Environmental Health, Placer County Department of Public Works, Placer County Flood Control and Water Conservation District).

Flood Protection

Goal 4.F To protect the lives and property of the citizens of Placer County from hazards associated with development in floodplains and manage floodplains for their natural resource values.

Policy 4.F.1 The County shall require that arterial roadways and expressways, residences, commercial and industrial uses and emergency facilities be protected, at a minimum, from a 100-year storm event.

Policy 4.F.2 The County shall recognize floodplains as a potential public resource to be managed and maintained for the public's benefit.

Policy 4.F.4 The County shall require evaluation of potential flood hazards prior to approval of development projects. The County shall require proponents of new development to submit accurate topographic and flow characteristics information and depiction of the 100-year floodplain boundaries under fully-developed, unmitigated runoff conditions.

Policy 4.F.5 The County shall attempt to maintain natural conditions within the 100-year floodplain of all rivers and streams except under the following circumstances:

a. Where work is required to manage and maintain the stream's drainage characteristics and where such work is done in accordance with the Placer County Flood Damage Prevention Ordinance, California Department of Fish and Game regulations, and Clean Water Act provisions administered by the U.S. Army Corps of Engineers; or

b. When facilities for the treatment of urban runoff can be located in the floodplain, provided that there is no destruction of riparian vegetation.

Policy 4.F.7 The County shall cooperate with the Placer County Flood Control and Water Conservation District surrounding jurisdictions, the cities in the County, and other public agencies in planning and implementing regional flood control improvements.

Policy 4.F.10 The County shall preserve or enhance the aesthetic qualities of natural drainage courses in their natural or improved state compatible with flood control requirements and economic, environmental, and ecological factors.

Policy 4.F.12 The County shall promote the use of natural or non-structural flood control facilities, including off-stream flood control basins, to preserve and enhance creek corridors.

Policy 4.F.14 The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County's Land Development Manual.

Water Resources

Goal 6.A To protect and enhance the natural qualities of Placer County's streams, creeks and groundwater.

Policy 6.A.1 The County shall require the provision of sensitive habitat buffers which shall, at a minimum, be measured as follows: 100 feet from the centerline of perennial streams, 50 feet from centerline of intermittent streams, and 50 feet from the edge of sensitive habitats to be protected including riparian zones, wetlands, old growth woodlands, and the habitat of rare, threatened or endangered species (see discussion of sensitive habitat buffers in Part I of this Policy Document). Based on more detailed information supplied as a part of the review for a specific project, the County may determine that such setbacks are not applicable in a particular instance or should be modified based on the new

information provided. The County may, however, allow exceptions, such as in the following cases:

a. Reasonable use of the property would otherwise be denied;

b. The location is necessary to avoid or mitigate hazards to the public;

c. The location is necessary for the repair of roads, bridges, trails, or similar infrastructure; or

d. The location is necessary for the construction of new roads, bridges, trails, or similar infrastructure where the County determines there is no feasible alternative and the project has minimized environmental impacts through project design and infrastructure placement.

Policy 6.A.2 The County shall require all development in the 100-year floodplain to comply with the provisions of the Placer County Flood Damage Prevention Ordinance.

Policy 6.A.3 The County shall require development projects proposing to encroach into a creek corridor or creek setback to do one or more of the following, in descending order of desirability:

a. Avoid the disturbance of riparian vegetation;

b. Replace riparian vegetation (on-site, in-kind);

c. Restore another section of creek (in-kind); and/or

c. Pay a mitigation fee for restoration elsewhere (e.g., wetland mitigation banking program).

Policy 6.A.4 Where creek protection is required or proposed, the County should require public and private development to:

a. Preserve creek corridors and creek setback areas through easements or dedication. Parcel lines (in the case of a subdivision) or easements (in the case of a subdivision or other development) shall be located to optimize resource protection. If a creek is proposed to be included within an open space parcel or easement, allowed uses and maintenance responsibilities within that parcel or easement should be clearly defined and conditioned prior to map or project approval;

b. Designate such easement or dedication acres (as described in a., above) as open space;

c. Protect creek corridors and their habitat value by actions such as: 1) providing an adequate creek setback, 2) maintaining creek corridors in an essentially natural state, 3) employing creek restoration techniques where restoration is needed to achieve a natural creek corridor, 4) utilizing riparian vegetation within creek corridors, and where possible, within creek setback areas, 5) prohibiting the planting of invasive, non-native plants (such as vinca major and eucalyptus) within creek corridors or creek setbacks, and 6) avoiding tree removal within creek corridors;

d. Provide recreation and public access near creeks consistent with other General Plan policies:

e. Use design, construction, and maintenance techniques that ensure development near a creek will not cause or worsen natural hazards (such as erosion, sedimentation, flooding, or water pollution) and will include erosion and sediment control practices such as: 1) turbidity screens and other management practices, which shall be used as necessary to minimize siltation, sedimentation, and erosion, and shall be left in place until disturbed areas; and/or are stabilized with permanent vegetation that will prevent the transport of sediment off site; and 2) temporary vegetation sufficient to stabilize disturbed areas.

f. Provide for long-term creek corridor maintenance by providing a guaranteed financial commitment to the County, which accounts far all anticipated activities.

Policy 6.A.5 The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff and to encourage the use of BMPs for agricultural activities.

Policy 6.A.6 The County shall require that natural watercourses are integrated into new development in such a way that they are accessible to the public and provide a positive visual element.

Policy 6.A.7 The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.

Policy 6.A.9 The County shall require that newly created parcels include adequate space outside of watercourses' setback areas to ensure that property owners will not place improvements (e.g., pools, patios, and appurtenant structures) within areas that require protection.

Flood Hazards

Goal 8.B To minimize the risk of loss of life, injury, damage to property, and economic and social dislocations resulting from flood hazards.

Policy 8.B.1 The County shall promote flood control measures that maintain natural conditions within the 100-year floodplain of rivers and streams.

Policy 8.B.5 The County shall coordinate with neighboring jurisdictions to mitigate the impacts of new development in Placer County that could increase or potentially affect runoff onto parcels downstream in a neighboring jurisdiction.

Policy 8.B.6 The County shall prohibit the construction of facilities essential for emergencies and large public assembly in the 100-year floodplain, unless the structure and access to the structure are free from flood inundation.

Policy 8.B.7 The County shall require flood control structures, facilities, and improvements to be designed to conserve resources, incorporate and preserve scenic values, and to incorporate opportunities for recreation, where appropriate.

Policy 8.B.8 The County shall require that flood management programs avoid alteration of waterways and adjacent areas, whenever possible.

Dry Creek Watershed Drainage Improvement Zone

The Dry Creek Watershed Drainage Improvement Zone Ordinance (Article 15.32 of the Placer County Code) establishes a drainage improvement zone for the Dry Creek watershed and requires the payment of specified fees and annual assessments as a condition of new development within the watershed area for the installation and maintenance of roadway drainage and stormwater drainage improvements. Mitigation fees are required for new development, and the expansion of existing development, within portions of the Dry Creek watershed (i.e., areas shown on Exhibit A attached to the ordinance codified in this article) that imposes a burden on the creeks and drainage infrastructure within the watershed by adding additional impervious surface and accelerating runoff, thereby adding more runoff and increasing discharge rates.

Dry Creek/West Placer Community Plan

The Dry Creek/West Placer Community Plan (Placer County Planning Department, 1990) provides goals and policies to guide the development within 9,200 acres in the southwestern portion of Placer County. The Community Plan area is bounded by Baseline Road on the north, Sutter County to the west, Sacramento County on the south, and the City of Roseville on the east. The Plan Area is within this 9,200-acre Community Plan area.

The proposed project's consistency with applicable Community Plan policies is evaluated in Appendix D. Community Plan policies and goals applicable to the proposed project include the following:

Community Development: Land Use

Goal — To protect the lives and property of the current and future citizens of the Plan Area from unacceptable risk resulting from flood hazards.

Policy 24 — Continue work in defining existing and potential flood problem areas.

Policy 25 — Continue to implement zoning policies which minimize potential loss of property and threat to human life caused by flooding and prohibit the creation of new building sites within the floodplain.

Policy 29 — Review proposed developments for their potential adverse affect on air and water quality.

Policy 30 — Encourage application of measures to mitigate erosion and water pollution from earth-disturbing activities such as grading and road construction.

Policy 41 — The approximate 100-year floodplain designation for Dry Creek and its tributaries shall be revised and modified as additional information becomes available, or as changes occur in the Dry Creek watershed which should cause changes in the flow characteristics. The modifications shall also lead to changes in zoning so that the 100-year floodplain continues to lie within the Open Space/Greenbelt land use designation.

Community Development: Public Services

Goal — Flood Control: Protect the lives and property of the citizens of the Dry Creek West Placer area from unacceptable impacts from development in the Dry Creek drainage basin or other watershed in the Plan Area.

Goal — Flood Control: Recognize the Dry Creek floodplain as a public resource to be managed and maintained for the public's benefit.

Policy 1 Continue to work closely with the U.S. Army Corps of Engineers, the Resource Conservation District, and the Placer County Flood Control District, in defining existing and potential flood problem areas.

Policy 2 Evaluate potential flood hazards in an area prior to approval of any future development by requiring submittal of accurate topographic information and depiction of the 100-year floodplain boundaries.

Policy 4 Maintain natural conditions within the 100-year floodplain of all streams except where work is required to maintain the stream's drainage characteristics and where such work is done in accordance with the Placer County Flood Damage Prevention Ordinance, Department of Fish and Game regulations and Clean Water Act provisions administered by the U.S. Army Corps of Engineers, or when facilities for the treatment of urban run-off can be located in the floodplain providing that there is no destruction of riparian vegetation.

Policy 5 Designate the 100-year floodplain of Dry Creek, including the major tributaries as open space, and provide for some compatible use of these areas in order to encourage their preservation.

Policy 9 Provide storm drains which can collect water for appropriate conveyance to Dry Creek for developing areas with a higher density than Rural-Residential.

Policy 11 Require a water quality analysis for all projects which have a density in excess of one unit per acre and/or have the potential of contaminating surface waters or the aquifer.

Policy 12 Require a feasibility analysis of improving the water quality of urban run-off for all commercial and industrial projects and those residential projects with densities of 1 d.u./acre or greater before run-off enters the Dry Creek watercourse. Said analysis shall consider all feasible mitigation measures including, but not limited to, artificial wetlands, infiltration/sedimentation basins, riparian setbacks, oil/grit separators, or other effective means, where appropriate.

Policy 13 Require the allocation of land, when necessary, for all projects which have significant impacts on the quantity and quality of surface water runoff, for the purpose of detaining post project flows and/or for the incorporation of mitigation measures for water quality impacts related to urban runoff.

Policy 14 Identify and coordinate mitigation measures with responsible agencies for the control of storm sewers, monitoring of discharges and implementation of measures to control pollutant loads in urban storm water runoff (e.g., California Regional Water Quality Control Board, Placer County Division of Environmental Health, Placer County Department of Public Works, etc).

Environmental Resources Management: Natural Resources

Goal 3 Manage the groundwater resource in such a way as to protect it from degradation and to maintain the water table.

Goal 4 Safeguard and maintain natural waterways to ensure water quality, species diversity, and unique habitat preservation.

Policy 2 Preserve in their natural condition all stream environment zones, including floodplains, and riparian vegetation areas.

Policy 3 Seek to maintain or improve the quality of water in the major creeks, especially Dry Creek and its tributaries.

Policy 4 Make every attempt to maintain the existing high quality of the groundwater and preserve aquifer recharge areas.

Policy 10 Improve water quality in the aquifer and the Dry Creek watershed by eliminating existing water pollution sources and by discouraging activities which include the use of hazardous materials around wetland and recharge areas.

Policy 14 No construction activities shall occur within the Dry Creek floodplain and only limited alteration of its tributaries shall be permitted except as part of the development of the floodplain as a recreational area, or for stream enhancement, or where work is done in accordance with the Placer County Flood Damage Prevention Ordinance, Department of Fish and Game Regulations, and Clean Water Act Provisions administered by the U.S. Army Corps of Engineers.

Policy 25 Intermittent streams often become permanent streams concurrent with the development of an area. Therefore, these waterways shall be protected from land development activities which have a potential for detrimental impacts (e.g., grading, channelization, etc.).

Goal 8 Recognize that clean air and water are essential resources for maintaining a high quality of living, and ensure that these resources are maintained at acceptable levels.

Environmental Resources Management: Open Space

Goal 6 To conserve the visual resources of the community, including the important vistas and wooded areas, and in particular, the riparian habitat of Dry Creek and its intermittent streams and natural drainage channels which are important in providing low cost natural flood control.

Policy 1 Preserve in their natural condition all stream environment zones, including floodplains, and riparian vegetation areas.

Policy 10 Areas hazardous to the public safety and welfare shall be open or predominantly open. This category includes:

a. Areas subject to landslide or with severe slope instability problems.
b. Streams and other areas subject to flooding by the 100-year storm.
c. Areas with high fire risk.
d. Areas of high noise exposure.

Policy 13 Stream corridors shall be left in an open, natural condition, except for structures or uses which are compatible with stream corridors.

Dry Creek Watershed Coordinated Resource Management Plan

The Dry Creek Watershed Coordinated Resource Management Plan (Placer and Sacramento counties, 2003) addresses resource management and land use in the Dry Creek watershed and is intended to determine management issues and identify management goals for the watershed. Specific goals include the following:

In-Stream Management and Restoration

- Allow floodplain flooding to occur.
- Reduce sedimentation.
- Design to accommodate geomorphology and flood control.
- Restore floodplain area.

Engineering

- Relocate sewer and water pipes that cross stream beds where problematic.

Best Management Practices

- Local onsite detention: development does not change flow regime; implement and enforce post construction BMPs for stormwater detention.
- Minimize discharge of surface runoff and associated pollutants; prevent further degradation through requiring effective water quality BMPs on future development.
- Establish vegetative buffers to filter surface runoff water.
- Use "Smart Growth" principles.
- Add off-stream regional detention for reducing flood flow peaks and peak timing; no net changes.
- Add additional BMPs/restore areas to bring hydrology back to 'normal' conditions (i.e., mimic natural system) where practicable.
- Implement Integrated Pest Management Programs throughout the watershed.

13.3 IMPACTS

This section identifies and discusses the environmental impacts resulting from the proposed project, and suggests mitigation measures to reduce the levels of impact. A detailed discussion of mitigation measures is included in Section 13.4.

13.3.1 Significance Criteria

Based on Appendix G of the CEQA guidelines, potentially significant impacts associated with hydrology and water quality from implementation of the proposed project, including construction and operation phases, have been identified for the following significance criteria:

- Substantial degradation of water quality (i.e., during construction or operation);

- Substantial increase in rate of runoff downstream of the site that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

- Substantial alteration in drainage flow paths and diversion of flows from one watershed to another in a manner that would result in substantial erosion or siltation on or off site;

- Substantial increase in volume of runoff leaving the site;

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures and fills that would impede or redirect flood flows; and
- Substantial depletion of groundwater supplies.

13.3.2 Project-Level Impacts

IMPACT 13-1:	Reduced stormwater quality during construction
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measures 13-1a through 13-1c
Proposed:	Mitigation Measures 13-1a, 13-1b, and 13-1c
Significance After Proposed Mitigation:	Less than Significant
Recommended:	None
RESIDUAL SIGNIFICANCE:	Less than Significant

The grading involved in preparing the Plan Area for construction would decrease vegetative cover and increase the potential for soil erosion, and thereby could cause an increase in suspended solids in runoff and local receiving waters. In addition to impacts from erosion, impacts to runoff water quality during construction could potentially result from leaks or spills of fuel or hydraulic fluid used in construction equipment; outdoor storage of construction materials; or spills of paints, solvents, or other potentially hazardous materials commonly used in construction.

The proposed project would also include construction of several underground utilities. These would be constructed along existing roadway right-of-ways or along the south bank of Dry Creek. No utilities would be constructed across Dry Creek. Trenching and pipeline construction would be temporary. When the utility is installed, the surface would be returned to its original condition or a trail/maintenance road would be placed over the pipeline alignment. The underground utilities to be constructed would include the following.

- A new 24-inch-diameter water supply pipeline would be constructed along the alignment of PFE Road and extend approximately 6,200 linear feet west from Walerga Road to an existing point of connection at Duffy Lane. Water supply pipelines within the Plan Area would be placed within the new street network.
- An additional backup water line along Walerga Road, south of PFE Road, may be required by Cal-Am in order to create a loop system for emergency supply, pending construction of the 24-inch-diameter water main along PFE Road to the east of the Plan Area.
- A new sewer line would be constructed from the new wastewater lift station to be located in the western portion of the Plan Area to the existing sewer force main point of connection located approximately 1,000 feet east of Walerga Road near Dry Creek. This new 10,000-foot-long pipeline would be aligned along the south bank of Dry Creek outside the riparian corridor. A trail and maintenance road would be constructed over the sewer line alignment.
- A new recycled water conveyance pipeline would be constructed from the point of connection near Dry Creek and Walerga Road along the south bank of Dry Creek or south along Walerga Road to where it would connect with the new internal distribution system.

As each future construction project within the Plan Area is proposed, grading and erosion control measures would be included on the project's improvement plans and submitted to the Placer County Engineering and Surveying Department (ESD) for review and approval. The BMPs to be implemented during construction to minimize discharge of sediments off site would be included on the improvement plans. Sediment generated by demolition, grading, or construction activities for the proposed project would be contained on the construction and demolition site and controlled using BMPs. When the proposed construction project is completed, the site would be covered with asphalt, landscaping, and buildings, so that sediment production would be negligible. Some of the BMPs that would be implemented during construction include silt fences, sand bags, fiber rolls, and a stabilized construction entrance. Improvement plans would include all proposed grading, drainage improvements, and vegetation and tree removal.

Construction activities involving the disturbance of one or more acres are required to apply for coverage under the SWRCB's NPDES General Permit for Storm Water Discharges Associated With Construction Activities. To obtain coverage under the permit, each applicant for future construction projects within the Plan Area would submit a Notice of Intent (NOI) with the required permit fee and prepare and implement a project-specific Storm Water Pollution Prevention Plan (SWPPP) for construction. The SWPPP must include development of site-specific structural and operational BMPs to prevent and control impacts to runoff quality, measures to be implemented before each storm event, inspection and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means. The grading and erosion control measures described above would be incorporated into the SWPPP. The RWQCB will issue Waste Discharge Requirements that set forth conditions, discharge limitations, and monitoring and inspection requirements with which the County will comply. The contents of the SWPPP are set forth in detail in the permit application package. The California Stormwater BMP Handbook for Construction (California Stormwater Quality Association, 2003a) also provides examples of BMPs that could be used.

The proposed project would include trenching and installation of pipelines along Dry Creek. The maximum depth of excavation is estimated to be approximately 5 feet bgs. Data from groundwater wells in the vicinity of the Plan Area suggest that groundwater within the site may be present at approximately 100 feet bgs; however, groundwater levels may be higher close to the creek or may be present as localized perched lenses. Therefore, it is possible that dewatering may be required as part of construction. If the excavation requires dewatering, proper implementation of BMPs during construction, as well as adherence to all applicable codes and permits, will minimize the potential for contamination of shallow groundwater. The dewatering effluent would be collected, tested, and disposed appropriately. Due to the proximity of the construction activities to the creek, water that would be encountered would be expected to be similar to the creek water. Therefore, the water removed during dewatering activities, if any, would likely be considered low threat discharge water according to the CVRWQCB's NPDES permit for low threat discharges. Prior to the start of construction activities, groundwater in the vicinity of the proposed pipeline construction would be characterized. If deemed appropriate, an NOI would be prepared and submitted to comply with the low threat discharge permit.

Impacts related to ground disturbance that could result from trench/pipeline construction within the offsite utility corridors or roadway widening are similar to those for proposed utility improvements and construction within the Specific Plan Area. Most offsite utility lines would be placed in already disturbed roadway easements. Those impacts include earthwork/grading or topographic alteration, and soil erosion. The mitigation measures described above would reduce any potentially significant effects to a less-than-significant level.

Potential significant impacts to water quality due to construction activities would be mitigated to a less than significant level through implementation of Mitigation Measures 13-1a through Mitigation Measure 13-1c, which stipulate that improvement plans that include erosion control measures shall be prepared for each future construction project proposed within the Plan Area in accordance with the provisions of the Placer County

Grading Ordinance and Land Development Manual and that a SWPPP shall be developed and implemented in accordance with the requirements of the NPDES General Permit for Storm Water Discharges Associated With Construction Activities.

IMPACT 13-2:	Increase in runoff rate downstream of the site
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measures 13-2a through 13-2d
Proposed:	Mitigation Measures 13-2a, 13-2b, 13-2c, and 13-2d
Significance After Proposed Mitigation:	Less than Significant
Recommended:	None
RESIDUAL SIGNIFICANCE:	Less than Significant

Development of the 525.8-acre Plan Area would result in an increase in impervious surfaces due to the construction of buildings, parking lots, and roads; therefore, peak flow rates would increase during storm events. Currently the site is undeveloped with the exception of a few houses and roads. Development densities would vary throughout the Plan Area depending on the land use (i.e., low-density, medium-density, or high-density residential or commercial). Construction of buildings, parking lots, and roads would increase the amount of impervious area within the Plan Area. Open Space areas and parks would remain essentially undeveloped, with little impervious area. Based on the Preliminary Drainage Master Plan for Riolo Vineyards (Civil Solutions, 2007), the Plan Area would be approximately 30 percent impervious at full buildout of the Plan Area.

As described in the Riolo Vineyards Design Guidelines, the proposed project would incorporate low-impact design elements, particularly in regards to stormwater management and site drainage applications. BMPs that promote overland flow of stormwater runoff and infiltration, such as bioswales, would reduce flow velocities, increase flow paths, and reduce peak flow rates. Aesthetically enhanced stormwater collection channels, detention areas, and bioswales are encouraged. For parking lots, the Design Guidelines require that all nonresidential projects provide landscaping over 10 percent of the total parking lot surface and encourage the use of bioswales in medians and the use of permeable pavement materials. Parks and greenways would be included throughout the Plan Area and provide opportunities for stormwater detention. Although the in situ soils are fine-grained and would likely not provide for sufficient infiltration, fill material and/or subsurface drains could provide an opportunity to incorporate infiltration-type BMPs such as pervious pavement and percolation trenches.

Analysis of potential impacts to Dry Creek peak flow rates resulting from the proposed project were performed using the following models (Civil Solutions, 2007):

- Base HEC-1 Model provided by PCFCWCD.
- Corrected Effective HEC-1 Model – The base model was corrected to provide for subbasin boundaries, slopes, and imperviousness for the areas within the Specific Plan Area. This model represents the model for the pre-project conditions.
- Post-Project Model – Includes the post-project development conditions for the site.
- Post-Project Mitigated Alternative Model – Includes an alternative for consideration if the proposed project were to provide detention basins onsite. This model shows that there is no benefit to the Dry Creek System Peak Flow Rates if onsite attenuation were provided within the Dry Creek system.

With development of the site and its associated increase in impervious surfaces, peak flows and runoff volumes from the Plan Area would increase. However, the additional runoff from the site would be relatively small compared to the flows in Dry Creek as summarized in Table 13-5. The estimated peak flows for pre-project, unmitigated post-project, and mitigated post-project conditions at key discharge points shown on Figures 13-2 and 13-4 are summarized in Table 13-6. The preliminary estimates indicate a slight increase (approximately less than 1 percent) in mitigated post-project flows compared with pre-project flows. The Plan Area is within the lower portion of the Dry Creek watershed, where detention is not recommended (JMM, 1992). Detaining flows in this portion of the watershed could delay the time when the peak flow occurs such that the peak flow would coincide with the arrival of peak flows from the upper portion of the watershed.

Table 13-5
Peak Flows and Runoff Volumes for Pre-Project and Post-Project Conditions

Description	Drainage Area Square Mi.	Peak Flow CFS[1]	Runoff Volume Acre Feet[2]
Pre-Project Conditions (see Figure 13-2)[3]			
Southern Tributary at PFE Road (PFE)	1.52	859	266
Southern Tributary upstream of confluence with Dry Creek (DCC10)	1.69	880	294
Dry Creek at Watt Avenue - Downstream of project (DC71CC)	91.00	15575	16604
Southwest discharge at PFE road (DC71 prorated)	0.028	29	7
Western Discharge at Watt Avenue (DC70)	0.17	98	29
Proposed Post-Project Conditions (see Figure 13-4)[4]			
Southern Tributary at PFE Road (DCC10)	1.52	859	266
Southern Tributary upstream of confluence with Dry Creek (DC70DC)	1.69	853	306
Dry Creek at Watt Avenue - Downstream of project (DC71R)	91.11	15586	16554
Southwest discharge at PFE road (DC71CR)	0.028	7 (1)	7
Western Discharge at Watt Avenue (DC71D)	0.02	22	5

Source Civil Solutions, 2007
1 100-year 24-hour design storm event (JMM, 1992)
2 Runoff Volume within peak 24-hour analysis period.
3 Values shown for pre-project conditions are based on the corrected effective model.
4 Includes alternative without mitigation at Dry Creek locations, and includes alternative with mitigation at the Southwest and Western discharge locations.

Table 13-6
Summary of Pre-Project, Post-Project Unmitigated, and Post-Project Mitigated Flows

Location (see Figures 13-2 and 13-4)	Drainage Area (square miles)	Pre-Project Peak Flow (cfs)	Post-Project Unmitigated Peak Flow (cfs)	Post-Project Mitigated Peak Flow[1] (cfs)
Dry Creek u/s Walerga Road (Location 1 on Figures 13-2 and 13-4)	86.6	15,478	15,478	15,478
Walerga Tributary	1.2	504	504	504
Dry Creek d/s Walerga Tributary (Location 2 on Figures 13-2 and 13-4)	88.6	15,559	15,567	15,567
Dry Creek at Watt Avenue	89.3	15,575	15,587	15,587
Southern Tributary at Dry Creek	1.8	843	847	847
Dry Creek and Southern Tributary at Watt Avenue (Location 3 on Figures 13-2 and 13-4)	91.1	15,575	15,633	15,643
Dry Creek and Southern Tributary d/s of Watt Avenue (Location 4 on Figure 13-2)	91.8	15,620	15,628	15,638

Source: Civil Solutions, 2007
Notes:
[1] For Post-Project Mitigated conditions, a detention basin was included in the model at the downstream end of the Southern Tributary prior to combining with Dry Creek.
d/s = downstream, u/s = upstream

As summarized in Table 13-7, the preliminary analysis indicates that the slight increase in peak flow rates due to the proposed project would not result in any significant increase in the 100-year water surface elevations in Dry Creek.

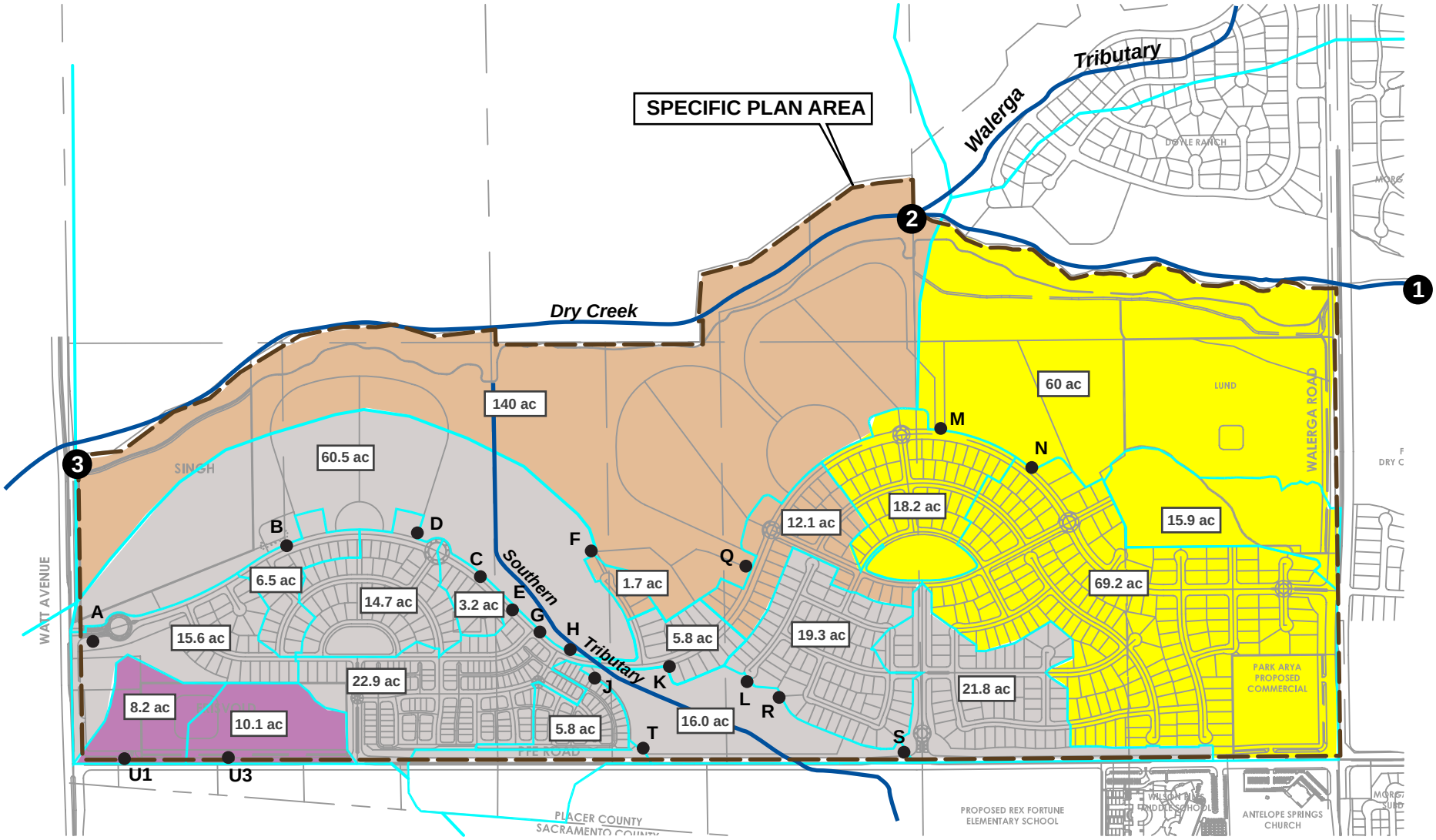
Table 13-7
Comparison of Base Flood Elevation for Dry Creek: Pre-Project Versus Post-Project

Location	100-Year Water Surface Elevation (feet)		Difference (feet)
	Existing Conditions	Post-Project Conditions	
Upstream of Walerga Road	95.27	95.27	0.00
Upstream of Watt Avenue	85.45	85.46	0.01
Downstream of Watt Avenue	83.07	83.07	0.00

Source: Civil Solutions, 2007

During detailed design of each construction phase within the Plan Area, project-specific peak flow calculations and evaluation would be necessary. The evaluation would assess whether detaining peak flows would exacerbate downstream flooding by allowing downstream peak flows to combine contemporaneously and would be used to ensure that facilities are sized to achieve the required reduction in flows in accordance with the County's Stormwater Management Manual. To support the design of each construction phase, a project-specific drainage report, including drainage calculations, shall be prepared for review and approval by Placer County ESD.

Roads and associated storm drain systems included as part of the proposed project would be designed in accordance with the Placer County Stormwater Management Manual. The Plan Area Design Guidelines



LEGEND

- 1 Dry Creek near Walerga Road
- 2 Dry Creek at Walerga Tributary
- 3 Dry Creek at Watt Avenue
- Acres — Post-Project Subbasins
- ● Storm Drain Pipe Outlet

- Drains north to Dry Creek (163.3 ac)
- Drains north to Dry Creek (153.8 ac)
- Drains towards Southern Tributary (192.1 ac)
- Drains southwest (18.3 ac)

Note: Acreage to be confirmed by applicant.

Site plan shown is conceptual and subject to change with future Tentative Subdivision maps.

N

0 450 900

Scale in Feet

Source:
Civil Solutions, 2007

POST-PROJECT DRAINAGE BOUNDARIES

January 2008
28066896

Riolo Vineyard Specific Plan EIR
Placer County, California

URS

FIGURE 13-4

1/11/08 vsa/hk ..\Riolo Vineyard\Graphics\EIR Jan 2008\F13-4_drainage_jan08.ai

and the Preliminary Master Drainage Plan provide guidance for design and preliminary sizing. The collector road system within the Plan Area would be designed to convey the runoff from a 10-year storm event via the storm drain system. Stormwater runoff in excess of the runoff generated by a 10-year event would be conveyed by the roadways. Culverts or bridges at road crossings would be designed for the unmitigated 100-year peak flows. The project-specific drainage reports for each future construction project within the Plan Area would include detailed evaluation of the proposed onsite facilities and evaluation of the capacity of downstream offsite drainage facilities to assess the need to upgrade, mitigate, or replace those facilities. Design would need to evaluate flow path changes and the contribution of those changes to offsite storm drain systems. In addition to onsite detention to reduce peak flows, other BMPs to attenuate peak flows would also be evaluated during design.

Installation of utilities to serve the Specific Plan Area development is distinct from site urbanization and is not anticipated to result in any substantial increase in impervious surface area or an increase in runoff. Design and installation of pipelines in offsite utility corridors is anticipated to remove and replace existing surfaces with similar materials. This would include soil and other earthen materials, or replacement of pavement in the case of utility lines within existing roadways, and would reduce the impact to a less than significant level.

Roadway widening, as in the case of Watt Avenue and Baseline Road and planned intersection improvements, would add a minor amount of additional impervious surface. As demonstrated by the preliminary analysis, the increased runoff from these improvements would not result in any significant impacts.

The proposed project must comply with the Placer County's Dry Creek Watershed Drainage Improvement ordinance. This ordinance requires new development that increases impervious surface areas within the Dry Creek watershed to pay fees to fund drainage improvement projects within the watershed. The fees include a one-time fee that is paid prior to start of construction and an annual fee that is included in a parcel's property tax. Both fees are based on the amount of impervious area created by the proposed development.

A portion of the Plan Area (18.3 acres in the southwest corner) currently drains south toward PFE Road through culverts under the road, and ultimately discharges to Dry Creek downstream of Watt Avenue. In order to meet the County's street encroachment requirements at PFE Road and because of downstream flow constrictions, the proposed project would include onsite detention to reduce post-project flow rates to less than pre-project flow rates. This portion of the Plan Area would include high-density residential development and potential future unspecified development of the Frisvold property. Onsite detention would be developed during design of these developments and included in project-specific drainage studies that would be prepared in accordance with the County's SWMM and submitted to ESD for review and approval. Onsite detention would be provided using a combination of above ground detention, parking area storage, and below ground vault and pipe storage.

Development of the Plan Area would increase the amount of wastewater generated and discharged from the Dry Creek WWTP (see Chapter 14, Public Services and Utilities, for further discussion). The Dry Creek WWTP discharges treated wastewater to Dry Creek approximately 3 miles upstream from the Plan Area. The Central Valley RWQCB issued a NPDES permit regulating discharges from the Dry Creek WWTP in 2000 (NPDES No. CA0079502, Order No. 5-00-164). The current permitted discharge for the plant is 18 mgd. To support the South Placer Wastewater Authority's (SPWA) Regional Wastewater and Recycled Water Systems Evaluation Project, the City of Roseville conducted an analysis of potential impacts to Dry Creek due to estimated future increases in wastewater generation. The total estimated future flow from the Dry Creek WWTP was originally estimated in the 1996 Master Plan EIR and West Roseville Specific Plan EIR to be approximately 24.9 mgd. Studies performed in 2005 revised this

projection to 19.3 mgd or approximately 5.6 mgd less than previously projected (Merritt Smith 2005 and 2006). This revised projection included 14.05 mgd for the current 2005 contributions and 5.28 mgd for estimated future contributions (Merritt Smith, 2005 and 2006). These future estimates included 1.09 mgd for the South Placer Municipal Utility District, of which less than 0.2 mgd would be attributed to the Plan Area at full buildout. The total incremental wastewater flow increase of 5.6 mgd would be less than 1 percent of the peak flows in Dry Creek downstream of the plant (5.6 mgd or 8.7 cfs would be less than 0.3 percent of the 2-year peak flow and less than 0.2 percent of the 10-year peak flow). Results of that study indicated that during a 100-year storm event, water surface elevations in Dry Creek downstream of the Dry Creek WWTP would be increased less than 0.02 feet (Merritt Smith, 2005); therefore, this impact would be considered less than significant.

The study also looked at dry season conditions. Under these conditions, the estimated increase in water surface elevations in Dry Creek would be less than 0.2 feet (Merritt Smith, 2005). This impact would also be considered less than significant. Therefore, the potential impact on peak flows in Dry Creek and downstream areas due to increased wastewater generated by development of the Plan Area is considered less than significant.

With implementation of the proposed Mitigation Measures 13-2a through Mitigation Measure 13-2d, including payment of the required one-time and annual Dry Creek Watershed Drainage Improvement fees, the impact of the proposed project on runoff rate would be reduced to a less-than-significant level.

IMPACT 13-3:	Increase in runoff volume downstream of the site
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measures 13-3a through 13-3c
Proposed:	Mitigation Measures 13-3a, 13-3b, and 13-1c
Significance After Proposed Mitigation:	Less than Significant
Recommended:	None
RESIDUAL SIGNIFICANCE:	Less than Significant

The proposed project would result in an increase in the volume of runoff leaving the site. Development of roads, buildings, and other paved and impermeable surfaces would reduce the amount of stormwater that infiltrates into the ground, and would increase the amount of water that runs off of the site. It is expected that the Plan Area would be approximately 30 percent impervious at full buildout (Civil Solutions, 2007). The estimated runoff volumes for pre-project and post-project conditions for the 525.8-acre Plan Area are summarized in Table 13-5. The Plan Area is within the lower portion of the Dry Creek watershed, where retention is not recommended (JMM, 1992).

As described above under Impact 13-2, a project-specific drainage report, including drainage calculations, shall be prepared for review and approval by Placer County ESD.

The proposed project must comply with the Placer County's Dry Creek Watershed Drainage Improvement Ordinance. This ordinance requires new development that increases impervious surface areas within the Dry Creek watershed to pay fees to fund drainage improvement projects within this watershed in Placer County. The fees include a one-time fee that is paid prior to start of construction and an annual fee that is included in a parcel's property tax. Both fees are based on the amount of impervious area created by the proposed development.

Increase in runoff quantity associated with development of the site is considered a potentially significant impact; however, the proposed mitigation measures would reduce this impact to a less-than-significant level.

IMPACT 13-4:	Reduced water quality during operation
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measures 13-4a through 13-4e
Proposed:	Mitigation Measures 13-4a, 13-4b, 13-4c, 13-4d and 13-4e
Significance After Proposed Mitigation:	Less than Significant
Recommended:	None
RESIDUAL SIGNIFICANCE:	Less than Significant

The proposed project would increase the overall amount of impervious surface, thereby increasing runoff from most of the site. Following construction of the proposed project, stormwater runoff quality would be expected to decline as more potential pollutants would be generated by human activities. Additionally, pollutants would tend to be flushed from impervious surfaces where they accumulate (e.g., paving and roofs) into drainage conveyances. Stormwater runoff from streets and the parking area would be expected to contain oils, grease, and debris.

The goal of the proposed project is to integrate BMPs throughout the project development to provide source control and water quality treatment of runoff from paved and other developed areas prior to discharge into the swales and streams that ultimately discharge into Dry Creek. As identified in the Preliminary Master Drainage Plan (Civil Solutions, 2007), treatment control BMPs could include the following:

- Direct runoff to grassy areas or open space to promote sheet flow, reduce flow velocities, and allow sediment and other pollutants to settle, as well as promote infiltration;
- Install water quality inserts in catch basins and/or storm drain inlets (e.g., "Fossil Filter") to remove oils and sediments;
- Install trash screens at storm drain inlets to prevent trash from entering the storm drain system and plugging the pipes; and
- Direct discharge from storm drain outlets to rock-lined ditches to prevent erosion.

Low-Impact Development (LID) measures would be considered during design and may also be incorporated into the development of the Specific Plan Area. These types of measures can substantially reduce the amount of runoff as well as treat runoff prior to entering the storm drain system. Ultimately, LID measures can reduce the size of structural BMPs. The site would be graded and BMPs would be selected and designed to avoid standing water; that is, BMPs would be designed to discharge all waters within 72 hours of the completion of runoff from a storm event, so as to comply with the Placer Mosquito Abatement District's requirements.

A post-development BMP Plan would be also be developed, using the design criteria and guidelines in the SWRCB's Stormwater Best Management Practices Handbook. BMPs would include but not be limited to installing water-saving devices in homes and commercial buildings, planting native and drought-tolerant plants, and installing drip and low-flow irrigation systems. The BMP Plan would be prepared by the Applicant/Developer and submitted to Placer County ESD for review and approval during Improvement Plan Review.

The sewer line for the Plan Area would be installed along the south bank of Dry Creek within the Dry Creek floodplain. The sewer line along Dry Creek would be a force main, and there would be no

manholes or access vaults along this section of the sewer line. With implementation of Mitigation Measures 13-4c and 13-4d, spillage of untreated sewage into Dry Creek would be prevented.

The Homeowners Association would enforce stormwater management provisions identified in the BMP Plan pertaining to residential units within the Plan Area. The Covenants, Conditions, and Restrictions would provide notice to future homeowners and enforceability of the measures contained within the BMP Plan to protect and maintain water quality within the site.

Development of the site would increase the amount of wastewater generated and discharged from the Dry Creek WWTP (see Chapter 14, Public Services and Utilities, for further discussion). As stated above, the Dry Creek WWTP discharges treated wastewater to Dry Creek approximately 3 miles upstream from the Plan Area, and this discharge is regulated by the Central Valley RWQCB under an NPDES permit issued in 2000. The permit stipulates effluent and receiving water limitations that must be met, thereby assuring compliance with receiving water quality criteria/objectives and protection of beneficial uses.

Development of the Plan Area and other projects anticipated in the region would increase the wastewater flows to the Dry Creek WWTP and increase the amount of discharge from the plant. Any plant modifications required to accommodate future flows would need to comply with all Basin Plan pollutant objectives and California Toxic Rule criteria. Therefore, the potential impact on water quality in Dry Creek and downstream areas due to increased wastewater generated by the proposed project would be less than significant.

In accordance with NPDES II requirements, the proposed project design would be required to incorporate BMPs to reduce the discharge of stormwater pollution to the maximum extent practicable. Potential significant impacts to water quality during operations would be mitigated to a less than significant level by designing the proposed project to include appropriate and effective BMPs, including LID measures.

IMPACT 13-5:	Placement of fill or structures in 100-year floodplain
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measure 13-5a through 13-5f
Proposed:	Mitigation Measures 13-5a, 13-5b, 13-5c, 13-5d, 13-5e, and 13-5f
Significance After Proposed Mitigation:	Less than Significant
Recommended:	None
RESIDUAL SIGNIFICANCE:	Less than Significant

As shown on Figure 13-2, the 100-year floodplain associated with Dry Creek exists within the Plan Area. Development of the proposed project would include regrading of the Plan Area, which could alter the floodplain. In addition, there would be placement of fill materials and culverts associated with new roads, bridge crossings, and drainage culverts. In general, the majority of the existing floodplain would remain in a natural state within open spaces along the creek.

Placement of fill within the floodplain could reduce the conveyance capacity of Dry Creek and increase the base flood elevations associated with the floodplain. The Preliminary Drainage Master Plan for Riolo Vineyards includes the results of a preliminary floodplain analysis for existing and proposed conditions. The proposed development would include minor encroachments into the floodplain, mostly to smooth out the edge of the floodplain against the northerly roadway within the Plan Area. Additional encroachments would be associated with several building pads that would be constructed along the same roadway (see Figure 13-2). As such, there would be slight changes to the boundaries of the floodplain compared to the existing FEMA-designated boundaries. The proposed project would provide in-kind compensatory storage to offset the hydraulic impacts due to these encroachments. Based on preliminary studies

summarized in the Drainage Master Plan, the amount of fill that would be placed within the existing floodplain would be approximately 614,000 cubic yards or approximately 42 AF (Civil Solutions, 2007). The offsetting excavation would be within the overbank area of Dry Creek. The preliminary analysis shows that with the proposed full development of the Plan Area and with in-kind compensatory storage, the proposed project would not have a significant effect on the base flood elevations along Dry Creek or its tributaries.

No development would occur within the 100-year floodplain; therefore, no people or structures would be exposed to flood hazards. Finished pad elevations and finished floor elevations would be set a minimum of 2 feet and 3 feet above the adjacent 100-year floodplain water surface elevation, respectively. As project-specific land uses and designs are developed, the floodplain analyses would be further refined to ensure that no private development would occur within the floodplain. The 100-year floodplain limits would be delineated on the improvement plans and maps submitted with project-specific developments. Prior to construction activities that would modify the floodplain boundaries, approval (i.e., a Conditional Letter of Map Revision [CLOMR]) would be obtained from FEMA. A Letter of Map Revision (LOMR) for Dry Creek and tributary floodplains affected by individual future construction projects within the Plan Area would be prepared after construction is completed and submitted to FEMA to document any floodplain changes.

Offsite utilities and roadways would encroach into areas that are within FEMA-designated 100-year flood zones. The utility lines and roadway improvements along Walerga Road would encroach into the FEMA 100-year floodplain of the Dry Creek drainage. In addition, the proposed long-term surface water supply line that would transport potable water and the pipeline that would convey recycled water from the Dry Creek WWTP to the Plan Area would be placed along the south side of Dry Creek and traverse the 100-year floodplain. Considering that offsite utilities would be buried and be enclosed systems, there would be no impact to the floodplain. The widening of Walerga Road would add width to an existing roadway and bridge, but add no new impediments to flood flows. Impacts from offsite utility line and roadway installation would, therefore, be less than significant.

Implementation of the proposed mitigation measures would reduce this impact to a less-than significant level by ensuring that development does not occur in the 100-year floodplain, or if small amounts of fill are placed in the floodplain, compensatory in-kind storage would be provided so that there would be no net increase in base flood elevations.

IMPACT 13-6: Reduce groundwater recharge
SIGNIFICANCE: Less than Significant
MITIGATION: None Warranted

Development and urbanization of the Specific Plan Area could reduce pervious area, which in turn would limit the percolation process and reduce groundwater recharge. Groundwater relies on annual rainfall and percolation through pervious soils to recharge the system. The predominate soils within the Plan Area are Type A and D hydrologic soils. Type A soils, which have high infiltration rate and provide opportunity for recharge, are located along Dry Creek and within its floodplain. This area would remain as open space and its recharge potential would not be substantially affected by the proposed project.

Type D soils, which have slow infiltration rates with high runoff potential, are present over the remaining portion of the Plan Area (approximately half of the Plan Area). This portion of the Plan Area would not qualify as an important groundwater recharge area within the meaning of General Plan policy 6.A.10b (protection of important groundwater recharge areas). Essentially all of the development (roads and buildings) would be constructed in this portion of the Plan Area.

Based on the low value of the Plan Area for recharge (with the exception of the Dry Creek corridor, which would remain in open space), this impact would be less than significant.

IMPACT 13-7:	Depletion of groundwater supplies
SIGNIFICANCE:	Less than Significant
MITIGATION:	None Warranted

Currently, there are four wells located on the project-level parcels; three of these are confirmed to be active. All other wells would be properly abandoned and destroyed in accordance with Placer County and DWR regulations. One new (replacement) well would be installed on APN 023-200-031 in accordance with Placer County and DWR regulations. This well would be operated and maintained by the property owner. Since the proposed project would not use groundwater as a water supply and several of the existing wells would be abandoned, there would be no impact to the well production on program-level parcels or other groundwater supplies.

Future owners of the Agricultural-10 parcels may want to install groundwater wells for irrigation water supply. These wells would be installed in accordance with Placer County and DWR regulations. Historically, the Plan Area was used for agriculture. In the event that these property owners decide to install wells for irrigation of their crops, the amount of land irrigated and the amount of groundwater that would be used by these properties would likely be less than historical groundwater use. Therefore this impact would be less than significant.

IMPACT 13-8:	Loss of grassy swales, potentially affecting hydrologic and water quality functions
SIGNIFICANCE:	Significant
MITIGATION:	Mitigation Measure 13-8a
Proposed:	Mitigation Measure 13-8a
Significance After Proposed Mitigation:	Less than Significant
Recommended:	None
RESIDUAL SIGNIFICANCE:	Less than Significant

Grassy swales are not regulated by the Corps under the federal Clean Water Act. However, these swales receive overflow from irrigation ditches, channelized streams, and perennial seasonal wetlands.

The proposed project would permanently remove 11.22 acres of grassy swales on parcels in the Plan Area owned or controlled by the Applicant through direct and indirect impacts, as summarized in Table 13-8. Direct impacts to these swales would result from grading and development of these areas for agricultural development and to construct parks and road and trail crossings. The loss of approximately 11 acres of this habitat would be a significant impact because these features provide important water quality and hydrologic functions that are similar to jurisdictional wetlands. These functions include retention of seasonal runoff, stabilization of sediment, nutrient removal, and transformation of captured nutrients into plant material. The hydrologic and water quality functions of grassy swales in the project area are important because these features discharge water into aquatic habitats in Dry Creek that support listed anadromous fish species.

Table 13-8
Permanent Impacts to Grassy Swales

Type of Impact	Acres Removed	
	On Site	Off Site
Development fill (including sports parks)	6.27	0.00
Road crossing/widening	1.03	0.00
Pedestrian and equestrian trails	0.08	0.00
Agricultural development	3.84	0.00
Total Permanent Impacts	**11.22**	**0.00**

As described in the evaluation of water quality impacts in this chapter (see Impact 13-4), the proposed project design would incorporate BMPs to reduce the discharge of stormwater pollution to the maximum extent practicable, as shown in Figure 13-5. Potential significant impacts to water quality during operations would be mitigated to a less-than-significant level by designing the proposed project to include appropriate and effective BMPs, including LID measures.

13.3.3 Program-Level Impacts

Potential impacts associated with development of the program-level parcels within the Plan Area are included in the previous discussion of project-level impacts. Applicants for program-level parcels would need to undergo the County's Subsequent Conformity Review Process to ensure that their development proposals conform to the Riolo Vineyard Specific Plan, CEQA regulations, and program-level mitigation measures identified in this Draft EIR. Upon conclusion of the Subsequent Conformity Review Process, the County will determine whether the proposed development entitlement is consistent with the Specific Plan, whether additional environmental review is required, and if so, the scope of such additional review.

IMPACT 13-9: Reduced water quality during operation
SIGNIFICANCE: Potentially Significant
MITIGATION: Mitigation Measure 13-9a
Proposed: None
Significance After Proposed Mitigation: Potentially Significant
Recommended: Mitigation Measure 13-9a
RESIDUAL SIGNIFICANCE: Less than Significant

Landowners of program-level parcels who apply for development entitlements will need to provide the County with LID plans to ensure water quality for any discharge to Dry Creek. Such plans would be designed to discharge all waters within 72 hours of the completion of runoff from a storm event, so as to comply with the Placer Mosquito Abatement District's requirements.

13.4 MITIGATION MEASURES

This section discusses mitigation measures that will be implemented to reduce project-related impacts to water resources. Mitigation measures are separately identified as those "Proposed" by the Applicant and those "Recommended" by County staff.

Mitigation Measure 13-1a: Implement Mitigation Measure 12-1b (Comply with County Grading Ordinance) (Proposed)

See Mitigation Measure 12-1b (Comply with County Grading Ordinance) in Section 12.4 of this Draft EIR.

Mitigation Measure 13-1b: Implement Mitigation Measure 12-3b (Comply with NPDES requirements for construction) (Proposed)

See Mitigation Measure 12-3b (Comply with NPDES requirements for construction) in Section 12.4 of this Draft EIR.

Mitigation Measure 13-1c: Implement Mitigation Measure 12-3d (Prepare and implement stormwater pollution prevention plan for construction) (Proposed)

See Mitigation Measure 12-3d (Prepare and implement SWPPP for construction) in Section 12.4 of this Draft EIR.

Mitigation Measure 13-2a: Prepare and submit project-specific drainage report (Proposed)

Each applicant/developer for future construction projects within the Plan Area shall prepare and submit with their project Improvement Plans a project-specific drainage report in conformance with the requirements of Section 5 of the Land Development Manual and the Placer County Stormwater Management Manual (SWMM) that are in effect at the time of submittal, to the Placer County ESD for review and approval. The project-specific drainage reports shall be consistent with the Drainage Master Plan and Development Standards for Plan Area. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include:

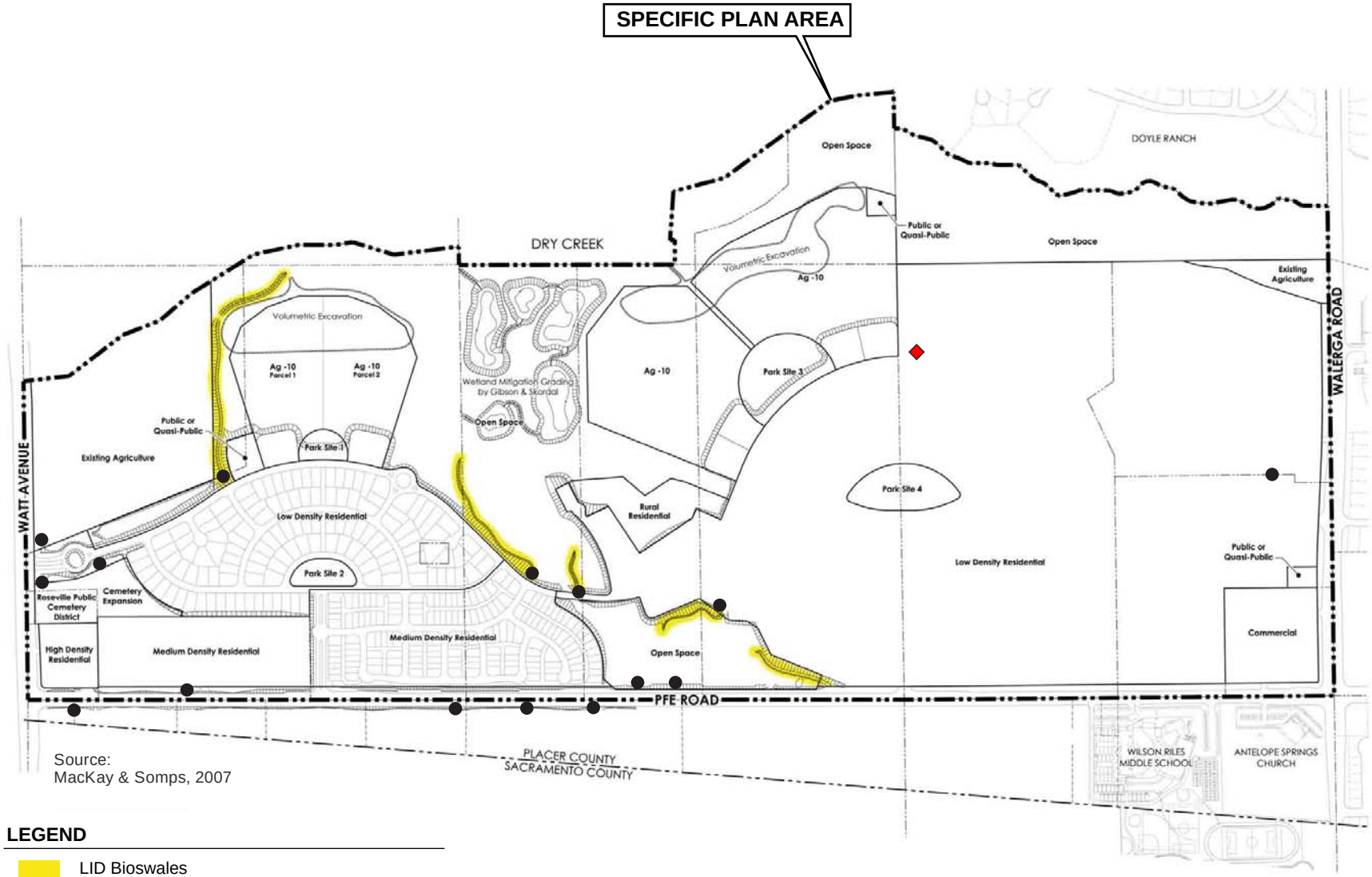
- Written text describing existing conditions and proposed improvements,
- The effects of the improvements,
- All appropriate calculations,
- A watershed map,
- Increases in downstream flows, and
- Proposed onsite and offsite improvements and drainage easements to accommodate flows from the project.

The report shall identify water quality protection features and methods to be used both during construction and for long-term post-construction water quality protection. "Best Management Practice" (BMP) measures shall be provided to reduce erosion, water quality degradation, and prevent the discharge of pollutants to stormwater to the maximum extent practicable.

No construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals. The project-specific drainage report shall demonstrate compliance with all relevant mitigation measures included in this Draft EIR.

Mitigation Measure 13-2b: Evaluate downstream offsite drainage facilities (Proposed)

The project-specific drainage reports prepared for each future construction project within the Plan Area shall evaluate offsite drainage facilities for conditions and capacity and shall be upgraded, replaced, or mitigated as specified by the Placer County ESD. Each future construction project shall upgrade or



Source:
MacKay & Somps, 2007

LEGEND

- LID Bioswales
- Storm Drain Pipe Outlet (project-level parcels)
- Storm Drain Pipe Outlet (program-level parcels)

Note:
Bioswales are not drawn to scale, and their depicted locations are conceptual.

LID BIOSWALES AND STORM DRAIN OUTLETS

January 2008
28066896

Riolo Vineyard Specific Plan EIR
Placer County, California

URS

FIGURE 13-5

1/11/08 hk ..\Riolo Vineyard\Graphics\EIR Jan 2008\F13-5_LID_Bioswales_jan08.ai

replace drainage facilities, or mitigate drainage impacts in other ways as needed and as specified by Placer County ESD. This includes any existing drainage facilities located immediately downstream of the project that would receive drainage and would be changed by the proposed project. The analysis must include any existing roadside ditches and/or culverts along Walerga Road, PFE Road, and Watt Avenue. While the Plan Area is within the Dry Creek watershed and as such onsite detention is not required to reduce peak flow rates due to development, onsite detention may be required in order to comply with the County's requirements regarding road encroachments. In accordance with the SWMM, all travel lanes of Watt Avenue, PFE Road, and Walerga Road may be required to remain clear of stormwater flow for all storm events, including the 100-year event. In addition, the Applicant will be required to mitigate peak flow rates to pre-development levels for 10- and 100-year storm events (per the Placer County Stormwater Management Manual) for only the portion of the Riolo Vineyard Plan Area that drains south towards PFE Road.

Mitigation Measure 13-2c: Submit one-time Dry Creek watershed drainage improvement fee (Proposed)

New development in the Plan Area shall be subject to the one-time payment of drainage improvement and flood control fees pursuant to the Dry Creek Watershed Interim Drainage Improvements Ordinance (Ref. Article 15.32, formerly Chapter 4, Subchapter 20, Placer County Code). This fee is used to fund installation and maintenance of roadway drainage and stormwater drainage improvements within the watershed. The actual fees to be paid will be those in effect at the time the payment occurs and are assessed on the amount of development area. Each developer will be responsible for submitting the appropriate fee for the specific land development project to the Placer County ESD. The one-time fee shall be paid prior to issuance of the building permit or approval of improvement plans.

Mitigation Measure 13-2d: Submit annual Dry Creek watershed drainage improvement fee (Proposed)

New development in the Plan Area shall be subject to payment of annual drainage improvement and flood control fess pursuant to the Dry Creek Watershed Interim Drainage Improvements Ordinance (Ref. Article 15.32, formerly Chapter 4, Subchapter 20, Placer County Code). These fees are used to fund installation and maintenance of roadway drainage and stormwater drainage improvements within the watershed. The Applicant will be required to form a County Service Area zone, if one currently does not cover the Plan Area, for collecting the annual special assessment. The actual fees to be paid will be those in effect at the time the payment occurs and are assessed on the basis of the new development acreage. The annual fee is a yearly charge and will be included on a parcel's property tax bill.

Mitigation Measure 13-3a: Implement Mitigation Measure 13-2a (Prepare and submit project-specific drainage report) (Proposed)

See Mitigation Measure 13-2a (Prepare and submit project-specific drainage report), described above.

Mitigation Measure 13-3b: Implement Mitigation Measure 13-2c (Submit one-time Dry Creek watershed drainage improvement fee) (Proposed)

See Mitigation Measure 13-2c (Submit one-time Dry Creek watershed drainage improvement fee), described above.

Mitigation Measure 13-3c: Implement Mitigation Measure 13-2d (Submit annual Dry Creek watershed drainage improvement fee) (Proposed)

See Mitigation Measure 13-2d (Submit annual Dry Creek watershed drainage improvement fee), described above.

Mitigation Measure 13-4a: Implement Mitigation Measure 12-3c (Comply with NPDES Phase II requirements) (Proposed)

See Mitigation Measure 12-3c (Comply with NPDES Phase II requirements) in Section 12.4 of this Draft EIR.

Mitigation Measure 13-4b: Prepare site-specific BMP plan (Proposed)

Each applicant/developer for each construction phase within the Plan Area shall submit a project-specific BMP Plan with the project improvement plans showing the onsite locations and effectiveness of the BMP facilities proposed for long-term water quality impact reduction during the Subsequent Conformity Review process and prior to Improvement Plan approval. The plan shall include a method for financing the long-term maintenance of the proposed project-specific facilities.

All BMPs for water quality protection, source control, and treatment control shall be developed in accordance with the California Stormwater Quality Association Stormwater *Best Management Practice Handbook* for New Development/Redevelopment (or other similar source approved by the Engineering and Surveying Division) for the applicable type of development and/or improvement. BMPs shall be designed to mitigate (minimize, infiltrate, filter, or treat) stormwater runoff. Flow or volume based post-construction BMPs shall be designed at a minimum in accordance with the Placer County Guidance Document for Volume and Flow-Based Sizing of Permanent Post-Construction Best Management Practices for Stormwater Quality Protection. Provisions shall be included for long-term maintenance of BMPs. BMPs shall reflect improvements in techniques and opportunities made available over time and shall reflect site-specific limitations. The County shall make the final determinations as to the appropriateness of the BMPs proposed for each project.

Source control BMPs should be incorporated into the design of each future construction project within the Plan Area. These BMPs emphasize reducing or eliminating pollutant in stormwater runoff at their source through runoff reduction and by segregating pollutants from stormwater runoff. Examples of source control BMPs that should be evaluated during design and could be incorporated into the project-specific BMP Plan as feasible include the following:

- Incorporate landscaping into the design, including planting of native and drought-tolerant plants to maximize natural water storage and infiltration opportunities and protect slopes and channels (Source Control SD-10);

- Direct roof runoff to grassy areas and away from paved areas or storm drains to promote overland flow of stormwater runoff and reduce velocities and peak flow rates (Source Control SD-11);

- Incorporate pervious pavement to promote infiltration and reduce runoff (Source Control SD-20)

- Provide enclosed commercial trash areas to avoid contact with stormwater runoff (Source Control SD-32);

- Design parking lots to direct storm water to storm drain inlets and away from garbage disposal areas (Source Control SD-32);
- Perform street and parking lot cleaning to remove potential debris and pollutants that could be picked up and conveyed by storm water;
- Where practical, install drip and low-flow irrigation systems to provide efficient irrigation and minimize runoff of excess irrigation water (Source Control SD-12); and
- Select building materials that do not introduce sources of pollutants (Source Control SD-21).

In addition, storm drainage from onsite and offsite impervious surfaces (including roads) shall be collected and routed through specially designed water quality treatment facilities (i.e., treatment control BMPs) for removal of pollutants of concern (i.e., sediment, oil/grease, etc.), as approved by the County's Engineering and Surveying Division. Treatment control BMPs should be integrated into and throughout the site to enhance the removal of pollutants that have entered the stormwater runoff. Examples of treatment control BMPs that should be evaluated during design include the following:

- Provide vegetative swale or buffer areas, which could be incorporated into landscaped areas, to slow down runoff velocities and allow sediments and other pollutants to settle (Treatment Control TC-30, TC-31);
- Install water quality inlets (e.g., oil/water separators) to remove "first flush" pollutants, including oil and grease (Treatment Control TC-50); and
- Incorporate biofiltration facilities to capture stormwater runoff from impervious areas and remove pollutants (Source Control TC-32).

With the Improvement Plans, the applicant/developer for the construction project shall verify that proposed BMPs are appropriate to treat the pollutants of concern from the project. The applicant/developer shall provide for the establishment of vegetation, where specified, by means of proper irrigation, for effective performance of BMPs. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way except as authorized by the project approvals or subsequent amendments approved by the County..

Mitigation Measure 13-4c: Maintain BMPs (Proposed)

Storm drainage from impervious surfaces proposed with the project shall be collected and routed through specially designed catchbasins, vegetated swales, vaults, infiltration basins, water quality basins, filters, etc., for entrapment of sediment, debris, and oils/greases or other identified pollutants, as approved by the Placer County ESD. The Applicant shall provide for the establishment of vegetation, where specified, by means of proper irrigation, for effective performance of BMPs. Contractual evidence of a monthly parking lot sweeping and vacuuming, and catch basin cleaning program shall be provided to ESD upon request. Failure to do so will be grounds for discretionary permit revocation. Maintenance of BMP facilities shall be provided by the project owners/permittees for each future construction project within the Plan Area unless, and until, a County Service Area is created and said facilities are accepted by the County for maintenance. Prior to approval of improvement plans, final maps shall show easements to be created and offered for dedication to the County for maintenance and access to these facilities in anticipation of possible County maintenance. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals or subsequent amendments approved by the County.

Mitigation Measure 13-4d: Implement Mitigation Measure 14-4a (Design onsite and offsite pipelines to have watertight joints in accordance with Placer County standards) (Proposed)

See Mitigation Measure 14-4a (Design onsite and offsite pipelines to have watertight joints in accordance with Placer County standards) in Section 14.4 of this Draft EIR.

Mitigation Measure 13-4e: Design and construct LID measures that comply with performance measures (Proposed)

The Applicant's LID strategies would consist primarily of bioswales that would fit into the overall drainage plan. Each major drainage discharge point in the Plan Area would be designed to include bioswales or a similar LID measure. The bioswales would be designed to be integrated with the rest of the drainage structures in the Plan Area and comply with the following performance standards to ensure that constructed grassy swales and other BMP/LID measures perform necessary functions related to protect the Plan Area's water quality:

- Maximum flow rates in the swale should not exceed 1.5 feet per second.
- Swales should be designed so that they are as flat and as wide as possible. In areas where topography prevents this, check dams would be installed to slow water movement. These check dams will periodically need to be cleared of sediment to remain functional. The swales should be constructed so that the side slopes are 3:1 or less to ensure that they do not contribute to sediment loading in the drainage.
- Swales should be designed for a maximum residence time of 24 hours to abate mosquito problems.
- Swale vegetation should consist of species that are native or at a minimum noninvasive. The use of perennial grasses or other plants that are not winter-dormant is recommended.
- The swale vegetation should be mowed at a frequency that maximizes performance. Four times per year is recommended for some species.
- A single swale can drain up to 4 acres of land (or surface). The proposed bioswales plan will include the maximum drainage area proposed per swale. The County would be responsible for verifying that the Applicant and other landowners in Plan Area have designated sufficient area for the grassy swales.

Preference is given to natural, low-maintenance LID solutions over engineered solutions. Review and approval by the County would be required for each LID plan before it is constructed in the Plan Area.

Mitigation Measure 13-5a: Implement Mitigation Measure 13-2a (Prepare and submit project-specific drainage report) (Proposed)

See Mitigation Measure 13-2a (Prepare and submit project-specific drainage report), described above.

Mitigation Measure 13-5b: Delineate post-project floodplain boundary (Proposed)

The Drainage Master Plan for the Plan Area shows the limits of the future, unmitigated, fully developed 100-year floodplain (post-development) for Dry Creek and its tributaries. Each future construction project within the Plan Area shall delineate the 100-year floodplain in the site-specific drainage report and on the Improvement Plans and shall restrict development in floodplains. Placer County shall require

evaluation of potential flood hazards prior to approval of each construction project. The County shall require proponents of new development to submit accurate topographic and flow characteristics information and depiction of the 100-year floodplain boundaries under fully-developed, unmitigated runoff.

All development in the 100-year floodplain must comply with the provisions of the Placer County Flood Damage Prevention Ordinance to prevent damage to structures and to limit the effect of development on base flood elevations.

Mitigation Measure 13-5c: Provide in-kind compensatory storage (Proposed)

The placement of fill in floodplains should be minimized. In the event that some fill within a floodplain is unavoidable, in-kind compensatory storage should be provided. During design, hydraulic analyses would be required to evaluate the resultant impacts on the floodplain and base flood elevations. While fill may be allowed within the floodplain fringe zone, fill should not be placed within the designated regulatory floodway. The floodway is the portion of the floodplain that must be reserved to convey the base flood without increasing the base flood elevation by more than one foot.

When a development encroaches into a floodplain, the flood storage lost must be compensated by providing in-kind storage. This is defined as excavating the same amount of material at the same elevation as placing fill to provide hydraulically equivalent storage. In addition to providing an offsetting volume of material at the same elevation, the replacement excavation must be located where it will be inundated during a 100-year flood; that is, it cannot be isolated away from the floodplain.

Mitigation Measure 13-5d: Prepare and submit conditional letter of map revision (CLOMR) (Proposed)

Prior to any modifications within the existing FEMA mapped 100-year floodplain along Dry Creek and its tributaries, the Applicant will prepare CLOMR Application documents, submit them to Placer County for review, amend as necessary and submit final CLOMR application to the County, with FEMA fees. Upon County signature of the application, the County may request that the Applicant's consultant process the application with FEMA, and provide additional information as requested by FEMA.

Mitigation Measure 13-5e: Submit Letter of Map Revision (LOMR) (Proposed)

Each applicant/developer for each construction phase within the Plan Area shall submit an application to FEMA for a LOMR if the development alters the floodplain boundaries and/or the base flood elevations by more than 1 foot. Prior to submitting the LOMR application, data and analyses will be reviewed and approved by the County ESD.

Mitigation Measure 13-5f: Prohibit grading activities within post-project floodplain (Proposed)

In order to protect site resources, agricultural practices cannot result in substantial modifications to topography or drainage that would affect the floodplain boundaries or base flood elevations. With the exception of agricultural activities such as plowing or planting, no grading activities may take place in the post-project 100-year floodplain as identified in the Drainage Master Plan except as necessary to construct and maintain drainage improvements.

Mitigation Measure 13-8a: Implement Mitigation Measures 12-3d (Prepare and implement stormwater pollution prevention plan for construction), 13-4b (Prepare site-specific BMP plan), 13-4c (Maintain BMPs), and 14-4a (Design onsite and offsite pipelines to have watertight joints in

accordance with Placer County standards if recycled water line is located along Dry Creek) (Proposed)

Mitigation Measure 12-3d is described in Section 12.4. Mitigation Measures 13-4b and 13-4c are described in Section 13.4. Mitigation Measure 14-3a is described in Section 14.4.

Mitigation Measure 13-9a: Implement Mitigation Measure 13-4e (Design and construct LID measures that comply with performance measures) (Recommended)

Mitigation Measure 13-4e (Design and construct LID strategies that comply with performance measures) is described above.