

## **4.8 HYDROLOGY/WATER QUALITY**

### **4.8.1 METHODOLOGY**

The *Water Quality and Groundwater Impacts Technical Memorandum* by Kleinfelder, Inc., dated March 11, 2016 has been prepared as part of preparing the Draft Environmental Impact Report (Draft EIR) for the proposed Inglewood Oil Field Specific Plan (Project). The Technical Memorandum can be found in Appendix G of this Draft EIR. This section addresses the potential environmental impacts on hydrology and water quality associated with development of the Maximum Buildout Scenario, as described in Section 3.0, Project Description of the Draft EIR. Direct, indirect, and cumulative impacts are addressed for each threshold criteria below, and growth-inducing impacts are described in Sections 6.0, CEQA-Mandated Analyses, of this Draft EIR.

Throughout this Draft EIR, the City's portion of the Inglewood Oil Field (77.8 acres) is referred to as the "Project Site" or the "City IOF." The entire surface boundary limits of the Inglewood Oil Field, including lands within both the City and County, is referred to as "Inglewood Oil Field." The portion of the Inglewood Oil Field that is only within the jurisdiction of the County of Los Angeles is referred to as the "County IOF."

The Drilling Regulations contains an extensive list of provisions to help reduce drainage, hydrology, and water quality impacts. These generally include requirements for a Storm Water Pollution Prevention Plan (SWPPP); Spill Prevention, Control, and Countermeasure Plan (SPCCP); site specific hydrologic analysis; Clean Technology Assessment; Groundwater Monitoring Program; Water Management Plan; Remediation of any substance discarded, dispersed, released or escaped into soils, water or groundwater; vapor recovery system for produced water tanks; closed systems for produced oil and water; requirements for water injection processing operations; and compliance with California Department of Oil, Gas, and Geothermal Resources (DOGGR) or local, State or federal regulations for injection of produced water during pipeline construction.

### **4.8.2 ENVIRONMENTAL SETTING**

#### **Groundwater**

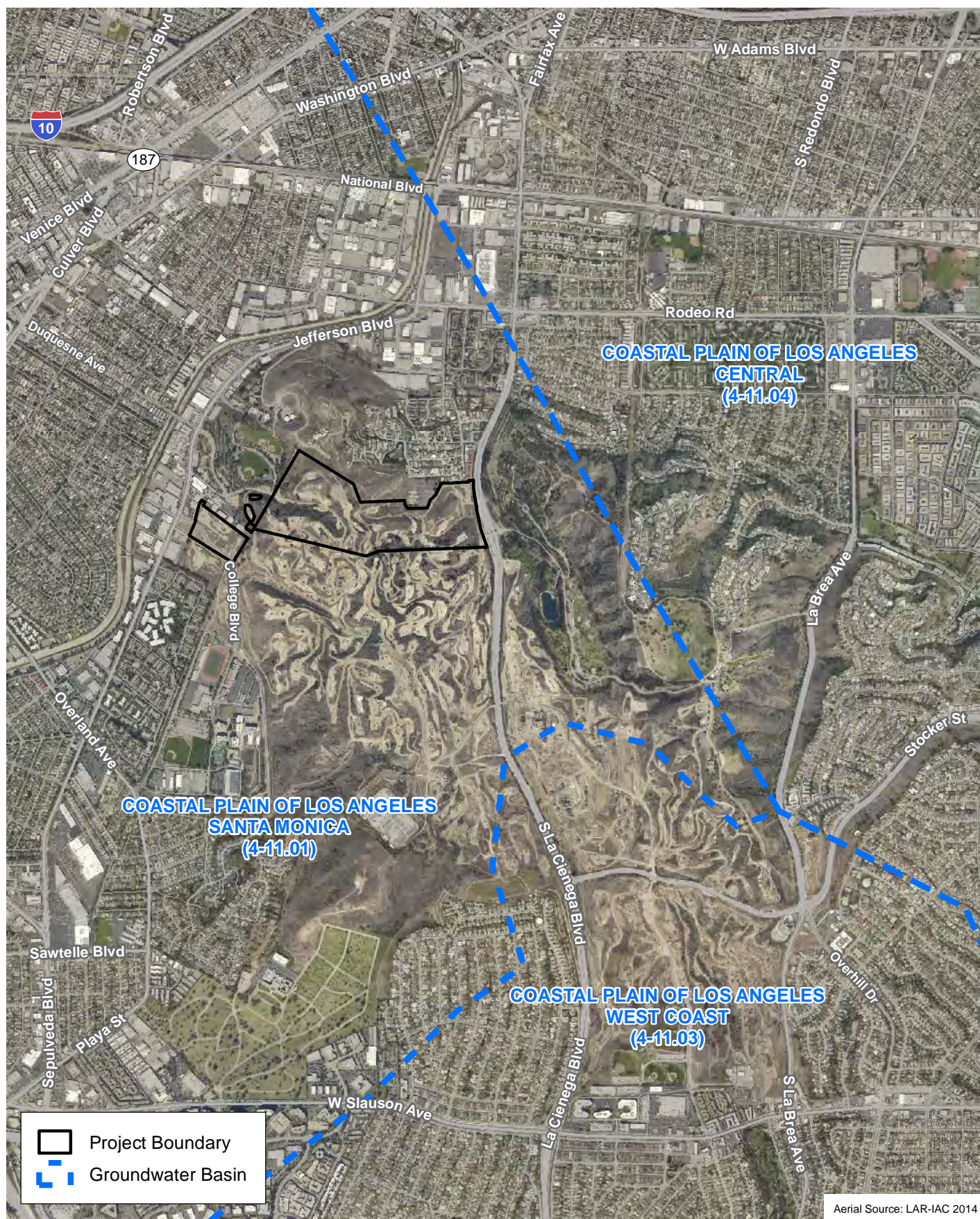
##### ***Boundaries and Formations***

The Project Site is located above the Coastal Plain of Los Angeles groundwater basin, overlying the southeast corner of the Santa Monica Subbasin (ID: 4-11.01), which is near the intersection of the West Coast Subbasin (ID 4-11.03), Central Subbasin (ID: 4-11.04), and Santa Monica Subbasin. The Santa Monica Subbasin (Subbasin) is not an adjudicated groundwater basin (DPW 2004, 2016). These Basins meet in an area of geologic faulting and folding, resulting in the Baldwin Hills. Exhibit 4.8-1, Groundwater Basins, depicts the Project Site in relation to the Subbasins.

The Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Water Quality Control Plan for the Los Angeles Region) depicts the Baldwin Hills as being "Mountains or hills" on Figure 1-6, Physiographic features of the Los Angeles Region, which are then "cut out" of the Los Angeles Coastal Plan on the Basin Plan's Figure 1-9, Regional Groundwater Basins (Los Angeles RWQCB 1994). Therefore, the Basin Plan does not depict the City IOF as being underlain by a groundwater basin. However, more recent data on the California Department of Water Resources, Groundwater Information Center depicts the Project Site as being underlain by the



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## Groundwater Basins

Inglewood Oil Field Specific Plan Project

Exhibit 4.8-1



2,000 1,000 0 2,000 Feet



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Santa Monica Subbasin. The Project Site is above the Crestal Subbbasin, one of the five subbasins within the Santa Monica Subbasin (DWR 2016).

The Santa Monica Subbasin is bound by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment on the south. The Subbasin extends from the Pacific Ocean on the west to the Newport-Inglewood (NI) Fault on the east, and underlies the cities of Santa Monica, Culver City, Beverly Hills, and portions of western Los Angeles. Ballona Creek is the dominant hydrologic feature on the surface and drains surface waters to the Pacific Ocean. The NI Fault forms the eastern boundary of the Subbasin and appears to restrict the movement of groundwater between the Baldwin Hills and about one-half mile south of Santa Monica Boulevard. The Overland Avenue Fault in Ballona Gap also appears to restrict groundwater movement, because groundwater levels on the east side of the fault are much higher than on the west side (DWR 2004). A map of nearby faults is provided in Exhibit 4.5-2, in Section 4.5, Geology and Soils, of this Draft EIR.

### ***Groundwater Recharge and Extraction***

Within the Santa Monica Subbasin, the Bellflower aquifer, Ballona aquifer, and Silverado aquifer are the most productive water-bearing formations (DWR 2004). Replenishment of groundwater in the Santa Monica Subbasin is mainly by percolation of precipitation and surface runoff onto the Basin from the Santa Monica Mountains. The NI Fault appears to inhibit replenishment by underflow from the Central Basin to the east, though some inflow may occur at its northern end (DWR 2004). This faulting and folding has resulted in the uplift and reportedly in the hydraulic disconnection of aquifers in the Inglewood Oil Field area from the regional groundwater flow system. Historical groundwater exploration and pumping data for the Inglewood Oil Field indicate that groundwater typically occurs in relatively thin lenses (i.e., ten feet thick or less), and that wells could not sustain groundwater extraction rates greater than one gallon per minute (gpm) (Kleinfelder 2016).

Due to faulting and uplift in the Baldwin Hills, the base of “fresh” water (i.e., “protected water” as defined by Senate Bill [SB] 4) is unusually shallow compared to adjacent groundwater basins, and ranges from approximately 400 to 550 feet below ground surface (bgs). The top of the Pico Formation, which is encountered at this depth range beneath the Inglewood Oil Field, represents the base of the fresh-water zone due to the Formation’s high clay content and low permeability. In addition, water-bearing formations at greater depth have much higher total dissolved solids (TDS) concentrations (Kleinfelder 2016).

Groundwater exploration within the Inglewood Oil Field has occurred to a maximum depth of 550 feet bgs, and groundwater has been measured at various depths, although a consistent saturated section beneath the Inglewood Oil Field appears to have been present in 2012 in wells screened (gaps or slots cut into the well casing to allow groundwater into the well) within the elevation interval of approximately 120 to 170 feet above mean sea level (msl). This may represent a semi-continuous perched zone beneath the Inglewood Oil Field, although the recent drought has likely resulted in decreases in water levels and drying of some wells. In addition, investigations described in the Community Standards District (CSD) EIR indicate that groundwater has been detected at depths of approximately 50 to 70 feet bgs in and near the Inglewood Oil Field. This corresponds to the depths to water in groundwater-monitoring-program wells (Kleinfelder 2016).

Descriptions of the sediments beneath the Inglewood Oil Field indicate they are non-water-bearing (or “no flow”) and discontinuous zones not hydraulically connected to adjacent regional aquifers. However, it is likely that groundwater beneath the Inglewood Oil Field is hydraulically connected to adjacent aquifers since known groundwater occurrences have not historically

daylighted at ground surface, indicating that, despite long-term recharge, these saturated zones are able to drain to deeper and/or laterally connected aquifers. It does appear, based on recorded hydraulic behavior (i.e., extraction testing), that the shallow aquifer system beneath the Inglewood Oil Field is not productive and lateral movement of subsurface water may be slow and of small volume; therefore, this suggests that the groundwater volume is insufficient for water supply and that communication with water supply aquifer(s) would be limited. In summary, although groundwater beneath the Project Site appears to occur in a poorly conductive aquifer system, it is likely in hydraulic connection with adjacent groundwater basins (Kleinfelder 2016).

### ***Santa Monica Subbasin Water Quality***

The California Department of Water Resources (DWR) released the last update to the official groundwater bulletin (Bulletin) for the Santa Monica Subbasin in 2004. The Bulletin estimated that the total groundwater storage in the Santa Monica Subbasin is approximately 1.1 million acre-feet (af) and stated that the current groundwater in storage is unknown. The Bulletin indicated that the groundwater in the Santa Monica Subbasin, based on analyses of seven public supply wells, has an average total dissolved solids (TDS) content of 916 milligrams per liter (mg/L) and a range of 729 to 1,156 mg/L (DWR 2004).

As noted above, the Project Site is above the Crestal Subbasin, one of the five subbasins within the Santa Monica Subbasin. Water quality is not available for Crestal Subbasin; however, a feasibility report for the development of groundwater resources within the Santa Monica and Hollywood Subbasins discussed the expected water quality within the Crestal Subbasin based on the known water quality of neighboring subbasins and the nature of the groundwater recharge in Crestal Subbasin. The feasibility report assumed that the overall TDS within Crestal Subbasin was 900 mg/L. In addition, it is expected that groundwater within Crestal Subbasin would have levels of iron and manganese above the Secondary Maximum Contaminant Levels (SMCLs), taste and odor compounds, and potentially gasoline-related volatile organic compounds (LADWP 2011).

The Los Angeles Regional Water Quality Control Board (Los Angeles RWQCB) Basin Plan has identified existing beneficial uses of groundwater for the Santa Monica Subbasin, include the following:

- **Municipal and Domestic Supply.** Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- **Industrial Service Supply.** Industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- **Industrial Process Supply.** Industrial activities that depend primarily on water quality.
- **Agricultural Supply.** Farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing (Kleinfelder 2016).

The Basin Plan also specifies beneficial use and groundwater quality objectives for all groundwater basins, as well as specific parameters for the Coastal Plain of Los Angeles Santa Monica Subbasin:

- In ground waters used for domestic or municipal supply (MUN) the concentration of coliform organisms over any seven day period shall be less than 1.1/100 ml.

- Ground waters designated for use as MUN shall not contain concentrations of chemical constituents and radionuclides in excess of the limits specified in the following provisions of Title 22 of the *California Code of Regulations*, which are incorporated by reference into the Basin Plan.
- Ground waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.
- Ground waters shall not exceed 10 mg/L nitrogen as nitrate-nitrogen plus nitrite-nitrogen ( $\text{NO}_3\text{-N} + \text{NO}_2\text{-N}$ ), 45 mg/L as nitrate ( $\text{NO}_3$ ), 10 mg/L as nitrate-nitrogen ( $\text{NO}_3\text{-N}$ ), or 1 mg/L as nitrite-nitrogen ( $\text{NO}_2\text{-N}$ ).
- Ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses (Los Angeles RWQCB 1994).
- Water Quality Objectives for the Santa Monica Subbasin include:
  - Total Dissolved Solids (TDS), 1,000 milligrams per liter (mg/L);
  - Sulfate, 250 mg/L;
  - Chloride, 200 mg/L; and
  - Boron, 0.5 mg/L (Kleinfelder 2016).

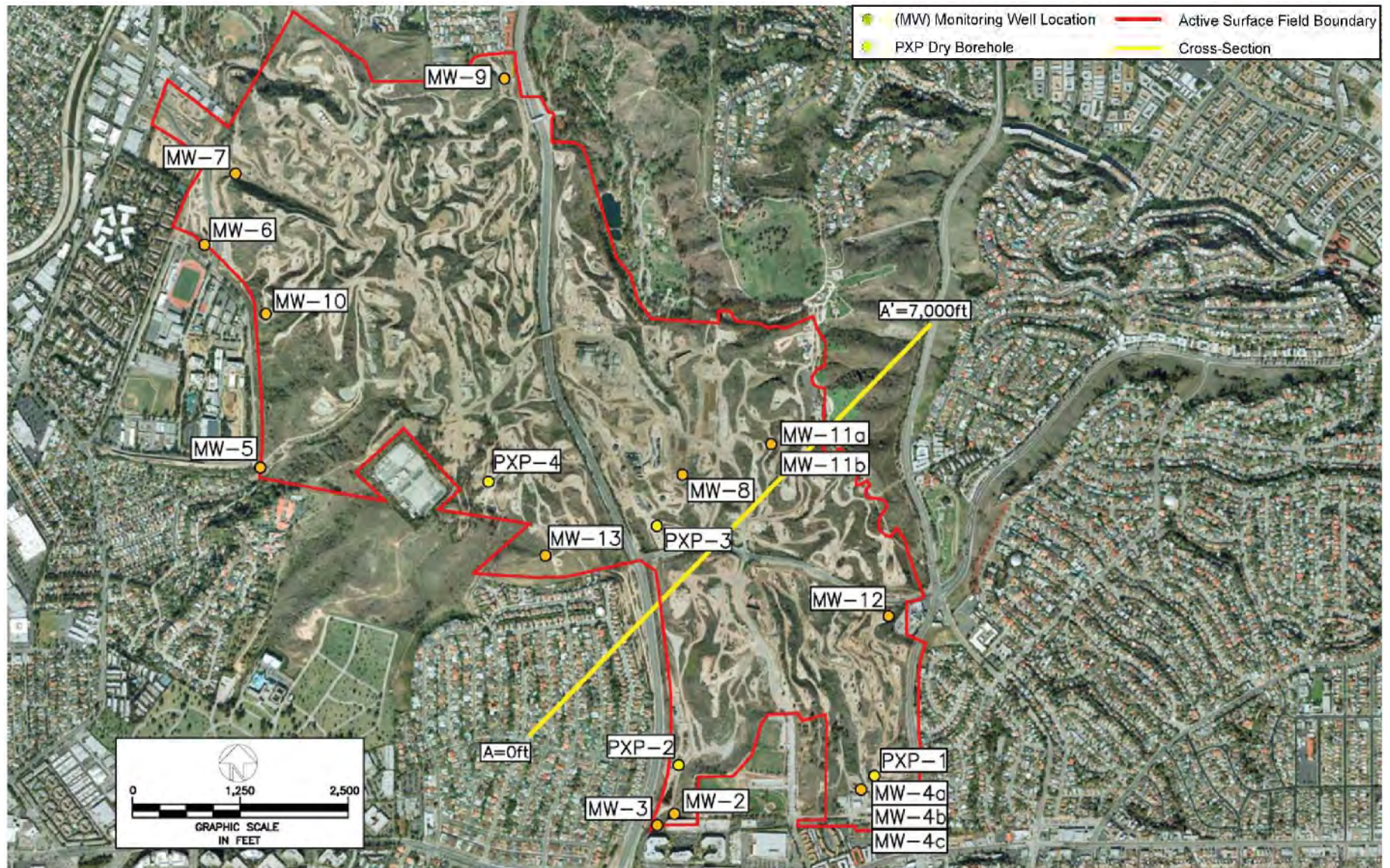
These parameters, with the identified analytical levels, can be used as a “guide post”, or a comparison, to evaluate overall groundwater quality within the identified groundwater basin. In this way, the basin can be determined to be meeting groundwater objectives, or not meeting groundwater objectives (Kleinfelder 2016).

### **Inglewood Oil Field Groundwater Monitoring Program**

Fifteen groundwater monitoring wells have been installed at the Inglewood Oil Field and a select group of these are included in the current quarterly groundwater monitoring program as required by the CSD (Kleinfelder 2016). Well and groundwater exploration locations are shown on Exhibit 4.8-2, Groundwater Monitoring Well Locations. Wells included in the current program are MW-3, MW-4A, MW-4B, MW-4C, MW-5, MW-6, and MW-7, although only two to three of them typically contain groundwater. The Los Angeles RWQCB requested that the network focus on preferred pathways in native canyon areas and suggested existing catch basins as likely target locations for the monitoring wells to determine impacts of oil field operations on groundwater quality. However, as mentioned above, wells were also required to be installed at multiple depths down to the top of the Pico Formation (Kleinfelder 2016). Exhibit 4.8-3, Groundwater Monitoring Well Cross-Sections shows the relative depth of each well and exploratory borehole.

Table 4.8-1 summarizes construction and recent groundwater conditions for wells in the groundwater monitoring program for the Inglewood Oil Field in the third quarter of 2016.





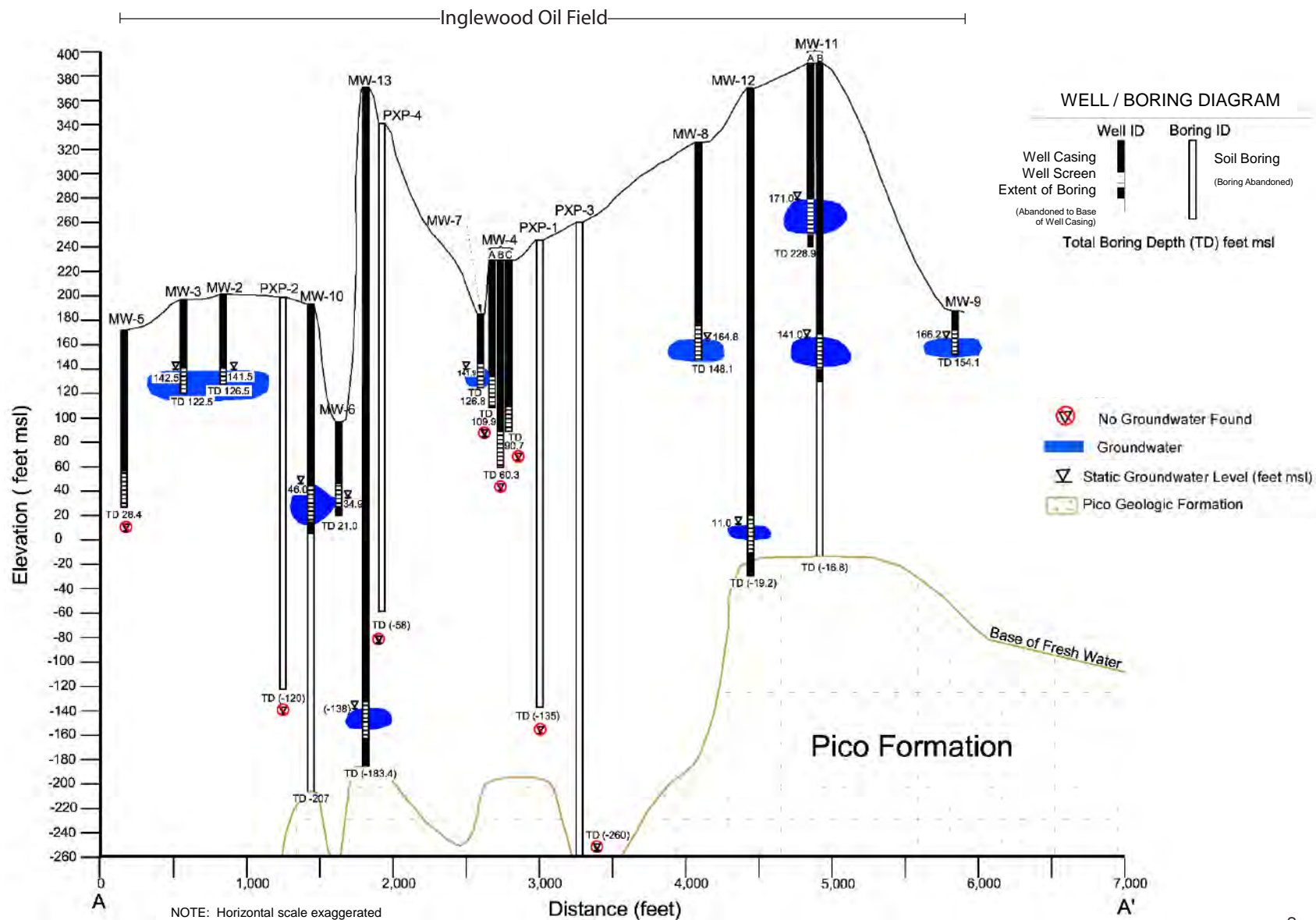
## Groundwater Monitoring Well Locations

Inglewood Oil Field Specific Plan Project

Exhibit 4.8-2

PSOMAS





Source: Kleinfelder 2015

## Groundwater Monitoring Well Cross-Sections

Inglewood Oil Field Specific Plan Project

Exhibit 4.8-3



**TABLE 4.8-1  
GROUNDWATER MONITORING WELL SPECIFICATIONS (Q3 2016)**

Well	Well Depth (feet)	Screen Interval (feet)	Groundwater Depth (feet)
MW-3	75.32	55–75	70.21
MW-4A	120.21	N/A	DRY
MW-4B	166.71	N/A	DRY
MW-4C	139.95	N/A	DRY
MW-5	144.31	115–145	DRY
MW-6	73.40	50–70	63.64
MW-7	58.40	40–60	48.25
N/A: not available (may be estimated from Figure 4-3C of the Hydraulic Fracturing Study [Cardno Entrix 2012] as referenced in Kleinfelder 2016). Source: Kleinfelder 2016			

These seven wells monitor the entire Inglewood Oil Field, although none are within Project Site. The monitored well closest to the City IOF is MW-7, located approximately 1,100 feet southwest of the Site. One well not in the monitoring program, MW-9, is located in the northeast corner of the Project Site. This well has a screen interval from 15 feet to 35 feet bgs; it is not known if it still exists or contains groundwater, although the borehole log, from the initial installation in 2010, indicates “saturated” and wet conditions starting at approximately 25 feet bgs. It is not known why this well is not actively monitored (Kleinfelder 2016).

Analytes tested each quarter include the following:

- Total petroleum hydrocarbons as diesel range organics (TPH-DRO);
- Total recoverable petroleum hydrocarbons (TRPH);
- Total dissolved solids (TDS);
- Benzene, toluene, ethylbenzene, xylenes (BTEX), and methyl tertiary-butyl ether (MTBE) (volatile organic compounds);
- Metals
- Five-day biochemical oxygen demand (BOD5);
- Nitrate and nitrite; and
- Potential of hydrogen (pH) (Kleinfelder 2016).

Historical monitoring indicates that concentrations of tested analytes are typically below their respective State and Federal maximum contaminant levels (MCLs), except for arsenic. Except for TDS, monitoring of sulfate, chloride, and boron, which are the Basin Plan groundwater quality parameters for the Santa Monica Subbasin, are not included in the CSD Monitoring Program (Kleinfelder 2016).



## **Surface Water Drainage**

### ***Federal Emergency Management Agency Floodplain***

The Federal Emergency Management Agency (FEMA) prepares a Flood Insurance Rate Map (FIRM) that depicts the spatial extent of Special Flood Hazard Areas (SFHAs) and other thematic features related to flood risk assessment. SFHAs are areas subject to inundation by a flood having a one percent or greater probability of being equaled or exceeded during any given year. This flood, which is referred to as the 1 percent annual chance flood (or base flood), is the national standard on which the floodplain management and insurance requirements are based.

The City IOF is designated as Flood Zone “X”, with the exception of the Dabney Lloyd Basin (Basin 002) located on the east side of the Project Site. The Dabney Lloyd Basin is designated as Flood Zone “A”. Flood Zone “X” refers to areas that have been determined to be outside of the 0.2 percent annual chance floodplain. Flood Zone “A” refers to areas subject to inundation by the one percent annual chance flood (LACDPW 2008).

### ***Ballona Creek Watershed***

The City of Culver City is located within the approximately 130-square-mile Ballona Creek Watershed, which is located on the coastal plain of the Los Angeles Basin, with the Santa Monica Mountains on the north and the Baldwin Hills on the south. The main tributary is Ballona Creek, which is a nine-mile flood control channel that flows into the Pacific Ocean. The portion of the creek that flows through Culver City is designated by the Los Angeles RWQCB as “Reach 2.” While no perennial or ephemeral streams are located on the Inglewood Oil Field (LACDRP 2008), six retention basins ultimately drain to Ballona Creek, located approximately 1,600 feet west of the Project Site.

The six surface water retention ponds are located along primary drainages to retain surface runoff from the Inglewood Oil Field. There is one retention basin located within the Project Site. It is the Dabney Lloyd Basin (Basin 002) and is located on the east side of the Project Site. Basin 002 receives runoff from the northwest portion of the Inglewood Oil Field including drainage from the Packard Basin and R.J. Basin. The basin also receives runoff from the Kenneth Hahn State Recreation Area. The maximum capacity of Basin 002 is approximately 294,000 gallons. The maximum flow is 3.06 mgd. The drainage area is 139 acres. Surface water runoff from the Inglewood Oil Field is covered under Sections A and B of National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002, Order No. 2009-0009-DWQ (SWRCB 2009), and operational discharges are subject to NPDES Permit No. CA0057827, Order No. R4-2013-0021 (Kleinfelder 2016).

### ***Ballona Creek Water Quality***

Ballona Creek is considered an impaired water body (pursuant to the Federal Clean Water Act – discussed below) and it is listed as impaired on the 2012 California Integrated Report (303(d) List/305(b) Report) for cadmium, coliform bacteria, dissolved copper, cyanide, lead, selenium, toxicity, trash, viruses (enteric<sup>1</sup>), and zinc (SWRCB 2015). Several programs monitor and prevent further creek degradation (e.g., Ballona Wetlands Foundation, Friends of Ballona Wetlands Education/Ecology Center, Santa Monica Bay Restoration Project, Los Angeles Regional Water Quality Control Board Trash Total Maximum Daily Load (TMDL) for Ballona Creek and Wetland).

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<sup>1</sup> Of, relating to, or occurring in the intestines

The Ballona Creek Metals TMDL, which was last revised in 2013, established permissible levels of copper within the creek. A water quality report card prepared by the California State Water Resources Control Board (SWRCB) indicated that the copper levels in the creek rarely exceed target levels and the creek has consistently met dry-weather targets for copper since 2009; however, levels of copper levels during wet-weather conditions regularly exceed water quality targets (SWRCB 2014). The Ballona Creek Bacteria TMDL, which was also last revised in 2013, established an allowable number of TMDL exceedance days. A TMDL progress report prepared by the SWRCB indicated that since 2010 there has been a significant improvement during dry winter weather, with most sites having fewer exceedances in 2012. However, there has been no improvement during the dry summer months and most sites consistently exceed the allowable number of exceedance days during dry summer weather (SWRCB 2013). The two TMDL reports for Ballona Creek discussed above indicate that water quality in Ballona Creek is improving, but further progress is needed before TMDL goals will be reached.

Los Angeles RWQCB Basin Plan potential beneficial uses of Ballona Creek in the Project Site vicinity include the following:

- **Municipal and Domestic Supply (Potential).** Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- **Warm Freshwater Habitat (Potential).** Preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- **Wildlife Habitat (Potential).** Supports terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources (Kleinfelder 2016).

#### 4.8.3 REGULATORY SETTING

##### Federal

##### ***Clean Water Act***

In 1972, the Federal Water Pollution Control Act (Clean Water Act [CWA]) was adopted to reduce water pollution. The CWA was amended in 1977 to establish the National Pollutant Discharge Elimination System (NPDES) Program, which regulates the discharge of pollutants to “Waters of the U.S.”<sup>2</sup> from any point source.<sup>3</sup> In 1987, the CWA was again amended to establish regulations for non-point sources, such as municipal and industrial discharges of storm water and non-storm water. Final regulations regarding storm water discharges were issued on November 16, 1990, and require that municipal separate storm sewer system<sup>4</sup> (MS4) discharges and industrial (including construction) storm water discharges to surface waters be regulated by an NPDES permit. The NPDES Program requirements applicable to the Project are discussed further below.

Water bodies not meeting water quality standards are deemed “impaired” and, under CWA Section 303(d), are placed on a list of impaired waters for which a TMDL must be developed for

<sup>2</sup> “Waters of the U.S.” include all waters that have, are, or may be used in interstate or foreign commerce (including sightseeing or hunting), including all waters subject to the ebb and flow of the tide and all interstate waters including interstate wetlands (33 CFR 328.3).

<sup>3</sup> Point sources are discrete water conveyances such as pipes or man-made ditches.

<sup>4</sup> MS4s are systems of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) used for collecting or conveying storm water (but not wastewater or combined sewage) that are owned or operated by a public agency with jurisdiction over the disposal of sewage, industrial wastes, storm water, or other wastes.



the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, non-point, and natural sources that a water body may receive without exceeding applicable water quality standards (with a “factor of safety” included). Once established, the TMDL allocates the loads (or concentrations) among current and future pollutant sources to the water body.

Several federal programs and regulations have been implemented under the authority of the CWA to regulate oil and gas production activities that could affect surface water quality. The Oil Pollution Act of 1990 (33 United States Code [U.S.C.] Sections 2701–2761) amended the CWA and established a single uniform federal system of liability and compensation for damages caused by oil spills in navigable waters, which are defined as waters of the United States. The Act requires the removal of spilled oil and establishes a national system of planning for and responding to oil spill incidents, including improved national oil-spill prevention, preparedness, and response capabilities; limitations on liability for damages resulting from oil pollution; funding for natural resource damage assessments; a fund for damage compensation payments; and the establishment of an oil pollution research and development program.

Regulations promulgated under the Oil Pollution Act (*Code of Federal Regulations* [CFR], Title 40, Section 112) require that an SPCCP must be prepared for most facilities with a total aboveground oil storage capacity greater than 1,320 gallons or a total underground oil storage capacity of greater than 42,000 gallons. The purpose of an SPCCP plan is to prevent oil from reaching waters of the United States and adjoining shorelines, and to contain discharges of oil.

SPCCP must be prepared and certified by a professional engineer, and implemented for facilities that store, process, transfer, distribute, use, drill, produce, or refine oil or oil production. At a minimum, an SPCCP must include (1) procedures and methods for proper installation of equipment to prevent an oil release; (2) a training and drill program for all personnel addressing oil spill response; and (3) a plan that outlines steps to contain, clean up, and mitigate any effects that an oil spill may have on waterways. Facilities that could substantially harm waters of the United States are also required to prepare a facility response plan (FRP) to prevent and respond to discharges of oil or other materials.

Other CWA regulations specifically address discharges of point source effluents from offshore and onshore oil and gas extraction activities (40 CFR 435). There are no offshore facilities in the Project Area. The regulations prohibit any “discharge of waste pollutants into navigable waters from any source, other than produced water, associated with production, field exploration, drilling, well completion, or well treatment (i.e., drilling muds, drill cuttings, and produced sands)” unless authorized by other regulatory provisions.

Two key Federal laws are the Safe Drinking Water Act (SDWA) and CWA. The SDWA protects drinking water and its sources (rivers, lakes, reservoirs, springs, and groundwater). Under the SDWA, the U. S. Environmental Protection Agency (USEPA) sets national health-based standards for drinking water and works with states and water suppliers to implement those standards. The EPA regulates construction, operation, permitting, and closure of injection wells for deep well wastewater disposal of flowback fluids as authorized by the SDWA and CWA. Protection of underground sources of drinking water is focused in the Underground Injection Control (UIC) program, which regulates the subsurface injection of fluid. Exclusions to UIC authority (SDWA Section 1421[d]) include:

- the underground injection of natural gas for purposes of storage and
- the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.

Consequently, hydraulic fracturing is excluded from the SDWA unless diesel fuels are used in fluids or propping agents that are injected, in which case, an authorization through the applicable UIC program is needed. States have the option of requesting regulatory primacy for Class II wells under the SDWA. Class II injection wells are oil and gas wells that inject fluids for enhanced recovery or wastewater disposal.

Disposal into surface waters is regulated by the National Pollutant Discharge Elimination System (NPDES) permit program. In California, the SWRCB and its Regional Water Quality Control Boards (RWQCBs) administer the NPDES program.

Section 303(d) of the CWA requires states to identify waters that are not expected to meet water quality standards after application of effluent limitations, to develop a priority ranking, and to determine the TMDL of specific pollutants that may be discharged into the water and still meet the water quality standards. In compliance with Section 303(d), the State Water Board prepared a list of impaired water bodies in the State. That list and a web-based interactive map can be found on the State Water Board website.<sup>5</sup>

### **State/Regional**

#### ***California Porter-Cologne Act***

California's Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act) grants the SWRCB and the nine RWQCBs power to protect surface water and groundwater quality and is the primary vehicle for implementing California's responsibilities under the federal CWA. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges of waste to surface water and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. Each RWQCB must formulate and adopt a Water Quality Control Plan (Basin Plan) for its region. The Basin Plan must conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State Water Policy. The Basin Plan establishes beneficial uses for surface and groundwater in the region, and sets forth narrative and numeric water quality standards to protect those beneficial uses.

#### ***Basin Plan***

The CWA requires the establishment of water quality standards for all water bodies at levels sufficient to protect beneficial uses, and establishment of an anti-degradation policy to prevent degrading waters. The Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (LA Basin Plan) (Los Angeles RWQCB 1994) is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. The LA Basin Plan provides quantitative and narrative criteria for a range of water quality constituents applicable to certain receiving water bodies and groundwater basins within the Los Angeles Region. The LA Basin Plan (1) designates beneficial uses for surface and ground waters; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and to conform to the State's anti-degradation policy; and (3) describes implementation programs to protect all waters in the Region. All applicable SWRCB and RWQCB plans and policies and other pertinent water quality policies and regulations are incorporated by reference into the LA Basin Plan.

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<sup>5</sup> SWRCB website: [http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/integrated2012.shtml](http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2012.shtml).



### ***California Toxics Rule***

The CWA also requires states to adopt water quality standards for receiving water bodies and to have those standards approved by the USEPA. Water quality standards consist of designated beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply, fishing), along with the water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations, levels of constituents, or narrative statements that represent the quality of water that supports a particular use. Because the State of California was unable to develop these standards for priority toxic pollutants, the USEPA promulgated the California Toxics Rule in 1992 (40 CFR 131.38), which fills this gap. It is noted that the objectives of the Basin Plan prepared by each RWQCB under the Porter-Cologne Act and the California Toxics Rule criteria do not apply directly to discharges of urban runoff, such as from the Project site, but rather apply within the specified receiving waters. The NPDES permit requirements applicable to the Project are described below.

### ***National Pollutant Discharge Elimination Program (NPDES)***

The SWRCB, through its RWQCBs, is responsible for ensuring that counties, cities and other dischargers meet the requirements of the CWA and the Porter-Cologne Act. Accordingly, all operators of an MS4, which is a system of drainages that convey and discharge storm waters and non-storm waters into surface “waters of the State”, are required to obtain permit coverage for those discharges under the NPDES Storm Water Program. As such, the County of Los Angeles and its 84 co-permittees, including the City of Culver City, have obtained a NPDES discharge permit (described below) from the RWQCB that sets forth requirements to prevent water pollution and address existing polluted waters within their respective jurisdictions. The RWQCB has the mandate to develop and enforce water quality objectives and implementation plans within their regions.

### ***Onshore Well Regulations***

#### **Title 14 of the California Code of Regulations (CCR) Division 2, Chapter 4, Subchapter 1, Article 3 (Sections 1722 through 1744)**

The State requires that the Operator of an oilfield facility develop a Spill Contingency Plan and for critical or high-pressure wells, requires other surface and sub-surface well safety devices. Actions governed by Article 3 include requirements for: casing and cementing; drilling fluid programs; directional surveys; plugging and abandonment; testing of idle wells and safety devices; approval of underground injection and disposal projects; and gas storage and cyclic steam injections projects.

### ***Pipeline Safety Standards***

#### **U.S. Department of Transportation (DOT) Office of Pipeline Safety in California (49 CFR Parts 190-199)**

Through certification by the DOT Office of Pipeline Safety, California inspects and enforces the pipeline safety regulations for all intrastate hazardous liquid pipelines and for intrastate gas pipelines that are public utilities in California. This work is performed respectively by the California Public Utilities Commission (CPUC) for gas pipelines and by the California Office of the State Fire Marshal for hazardous liquid pipelines.

### California Pipeline Safety Requirements (California Government Code, Sections 51010–51018)

These regulations provide specific safety requirements that are more stringent than the federal pipeline safety rules (i.e., 49 CFR Parts 190–199). These include, but are not limited to periodic hydrostatic testing of pipelines by state-certified independent pipeline testing firms; pipeline leak detection; and required reporting of all leaks. All new pipelines must also be designed to accommodate passage of instrumented inspection devices (smart pigs) through the pipeline.

### California Pipeline Safety Act of 1981

The California Pipeline Safety Act of 1981 gives regulatory jurisdiction to the State Fire Marshal for the safety of all intrastate hazardous liquid pipelines and all interstate pipelines used for the transportation of hazardous or highly volatile liquid substances. The law establishes the Federal Hazardous Liquid Pipeline Safety Act and federal pipeline safety regulations as the governing rules for interstate pipelines.

### Oil Pipeline Environmental Responsibility Act (California Civil Code, Section 3333.4)

The Oil Pipeline Environmental Responsibility Act requires every pipeline corporation qualifying as a public utility and transporting crude oil in a public utility oil pipeline system to be held strictly liable for any damages incurred by “any injured party which arise out of, or are caused by, the discharge or leaking of crude oil or any fraction thereof”.

### ***Underground Injection Control (UIC) Program***

The UIC Program was established in 1974 by the SDWA and regulates the construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal to protect underground sources of drinking water from potential contamination from injection wells. In California, primary authority for implementing and enforcing the UIC Program has been granted by the USEPA to the DOGGR. The DOGGR administers the construction, operating, monitoring and testing, reporting, and closure requirements for well owners or operators of Class II injection wells.

The DOGGR regulates oil and gas wells that inject fluids (Class II injection wells) through its UIC Program. The program is monitored and audited by the USEPA under the SDWA. The UIC Program includes permitting, inspection, enforcement, mechanical integrity testing, plugging and abandonment oversight, data management, and public outreach (DOGGR 2017). Surface disposal is overseen by the RWQCBs and disposal of oil field produced water into deep injection wells is overseen by the DOGGR.

As of March 2015, no contamination of water used for drinking or agricultural purposes related to underground injection by the oil and gas industry had been detected in water supply wells tested by the SWRCB (DOC 2015a).

### ***Well Stimulation Regulations (SB4)***

“Well stimulation” practices are defined by SB 4 (Pavley, Ch 313, Stats of 2013) as approved by the Governor of California on September 20, 2013, and include hydraulic fracturing and other treatments that increase the flow of oil and natural gas to wells and then to the surface for recovery. The regulations, which went into effect on January 1, 2015, are designed to protect health, safety, and the environment. They address a comprehensive list of issues, including testing, monitoring, public noticing, and permitting and would be administered by the DOGGR.



To implement the provisions of SB4 and Section 3160 of the *California Public Resources Code* (PRC), the California Department of Conservation added Sections 1751 et. seq., 1761 et. seq., 1777.4, and 1780 et. seq. to the CCR, Title 14, Division 2, Chapter 4, Subchapter 2. The adopted regulations are intended to supplement the DOGGR's current oil and gas regulatory framework with regulations specific to well stimulation to meet the mandates of SB4. The adopted regulations satisfy the goals and requirements of SB4 by setting requirements to ensure integrity of wells, well casings, and the geologic and hydrologic isolation of the oil and gas formation during and following well stimulation treatments; requiring full disclosure of the composition and disposition of well stimulation fluids, including hydraulic fracturing fluids, acid well stimulation fluids, and flowback fluids; implementing express statutory requirements regarding well stimulation permits, public disclosure, neighbor notification, and water well testing.

Also, the adopted regulations address the distinction between well stimulation treatment and other routine operations; the distinction between well stimulation and underground injection projects; and the acid concentration threshold at which an acid matrix stimulation treatment is subject to the requirements of SB4 (DOC 2014). In summary, the well stimulation permit application to the DOGGR must include detailed information about the fluids to be used, a ground water monitoring plan, and a water management plan. Copies of an approved permit must be sent to neighboring property owners and tenants, and water well testing must be provided upon request (DOC 2014). The adopted regulations specifically related to water resources are broadly summarized below. The full text of the adopted SB4 regulations, including those listed below, are publicly available on the DOGGR website.<sup>6</sup>

Section 1783.1, Contents of Application for Permit to Perform Well Stimulation Treatment, requires the application for a permit to perform a well stimulation treatment to include the following:

- (19) Identification of where in the operator's Spill Contingency Plan handling of well stimulation fluid and additives has been addressed;
- (22) The well stimulation treatment design;
- (23) A water management plan that includes: an estimate of the amount of water to be used in the treatment; an estimate of water to be recycled following the well stimulation treatment; a description of how and where the water from a well stimulation treatment will be recycled, including a description of any treatment or reclamation activities to be conducted prior to recycling or reuse; the anticipated source of the water to be used in the treatment, including the well or wells from which the water will be produced or extracted, the water supplier, or the point of diversion of surface water; and the anticipated disposal method that will be used for the recovered water in the flowback fluid from the treatment that is not produced water that would be reported pursuant to Section 3227;
- (24) A description of anticipated procedures to comply with the Hazardous Waste Control Law (Health and Safety Code Sections 25100 et. seq.) and implementing regulations pertaining to the activities and information provided under this article;
- (25) The anticipated source, amount, and composition of the base fluids to be used in the treatment, including pH, flash point, and any constituents listed

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<sup>6</sup> DOGGR's well stimulation treatment website:  
<http://www.conservation.ca.gov/dog/Pages/WSTProgramRequirements.aspx>.

in California Code of Regulations, Title 22, Section 66261.24, Subdivision (a)(2)(A) and (B);

- (26) The estimated amount of treatment-generated waste materials that are not addressed by the water management plan, and the anticipated disposal method for the waste materials;
- (27) Documentation from either the State Water Board or the Regional Water Board that the well subject to the well stimulation treatment is covered by a regional groundwater monitoring programs pursuant to Water Code Section 19783, Subdivision (h)(1), or indication that the operator is working with the State Water Board or Regional Water Board to ensure that the well subject to well stimulation treatment is covered in accordance with Water Code section 10783;
- (28) A complete list of the names, Chemical Abstract Service numbers, and estimated concentrations, in percent by mass, of each and every chemical constituent of the well stimulation fluids anticipated to be used in the treatment; and
- (29) Whether it is anticipated that radiological components or tracers will be injected during the well stimulation treatment.

Section 1783.2, Neighbor Notification, Duty to Hire Independent Third Party, requires the operator receiving a permit to hire an independent third party to identify surface property owners and tenants, other than the operator of the well subject to stimulation, of legally recognized parcels of land situated within a 1,500-foot radius of the wellhead receiving well stimulation treatment, or within 500 feet of the surface representation of the horizontal path of the subsurface parts of such well. All those identified shall receive a copy of the approved well stimulation permit, and a completed Well Stimulation Treatment Neighbor Notifications Form (incorporated into the SB 4 regulations).

Section 1783.3, Availability of Water Testing, Request for Water Testing, states that a surface property owner notified pursuant to Section 1783.2 may request water quality testing on any existing water well or surface water located on the parcel that is suitable for drinking or irrigation purposes.

Section 1783.4, Groundwater Sampling, Testing, and Monitoring, provides interim groundwater monitoring criteria related to well stimulation that is conducted prior to the finalization of groundwater modeling criteria and implementation of ground water monitor programs by the SWRCB, as required by SB4.

Section 1784, Well Stimulation Treatment Area Analysis and Design, requires the operator to conduct an analysis to ensure the geologic and hydrologic isolation of the oil and gas formation during and following well stimulation treatment.

Section 1785, Monitoring During Well Stimulation Treatment Operations, requires the operator to continuously monitor and record surface injection pressure, slurry rate, proppant concentration, fluid rate, and all annuli pressures during the well stimulation treatment, if applicable. The operation is required to terminate the treatment, immediately provide the collected data to the DOGGR, and perform diagnostic testing if any of several specified events occurs indicating a possible breach in the well.

Section 1786, Storage and Handling of Well Stimulation Treatment Fluids, requires the following for well stimulation treatment fluid, additives, and produced water from a well that has had a well stimulation treatment:

- (1) Fluids shall be stored in compliance with the secondary containment requirements of Section 1773.1, except that secondary containment is not required under this section for production facilities that are in one location for less than 30 days. The operator's Spill Contingency Plan shall account for all production facilities outside of secondary containment and include specific steps to be taken and equipment available to address a spill outside of secondary containment.
- (2) Operators shall be in compliance with all applicable testing, inspection, and maintenance requirements for production facilities containing well stimulation treatment fluids.
- (3) Fluids shall be accounted for in the operator's Spill Contingency Plan.
- (4) Fluids shall be stored in containers and shall not be stored in sumps or pits.
- (5) In the event of an unauthorized release, the operator shall immediately implement the Spill Contingency Plan; notify the Regional Water Board and any other appropriate response entities for the location and the type of fluids involved, as required by all applicable federal, State, and local laws and regulations; and perform clean up and remediation of the area, and dispose of any cleanup or remediation waste, as required by all applicable federal, State, and local laws and regulations.
- (6) Within 5 days of the occurrence of an unauthorized release, the operator shall provide the Division a written report that includes a description of the activities leading up to the release; the type and volumes of fluid released; the cause(s) of release; action taken to stop, control, and respond to the release; and steps taken and any changes in operational procedures implemented by the operator to prevent future releases.
- (7) Operators shall conduct all activities that relate to storage and management of fluids in compliance with all applicable requirements of the Regional Water Board, the Department of Toxic Substances Control, the Air Resources Board, and the Air Quality Management District or Air Pollution Control District, the Certified Unified Program Agency, and any other State or local agencies with jurisdiction over the location of the well stimulation activities.
- (8) An operator who generates a waste, as defined in HSC Section 25124 and CCR Title 22, Section 66261.2, in the course of conducting well stimulation activities, including but not limited to well stimulation treatment fluid, additives, produced water from a well, solids separated from well stimulation treatment fluid, remediation wastes, or any other wastes generated from the processing, treatment or management of these wastes, shall determine if the waste is a hazardous waste by sampling and testing the waste according to the methods set forth in CCR Title 22, Division 4.5, Chapter 11, Article 3 (Section 66261.20 et seq.), or according to an equivalent method approved by the Department of Toxic Substances Control pursuant to California Code of Regulations, title 22, section 66260.21, except where the operator has determined that the waste is excluded from regulation under CCR Title 22, Section 66261.4 or HSC Section 25143.2. Notwithstanding any other section in this article, wastes that are determined by the operator to be hazardous

wastes shall be managed in compliance with all hazardous waste management requirements of the Department of Toxic Substances Control.

Section 1787, Well Monitoring After Well Stimulation Treatment, requires operators to monitor each well that has had a well stimulation treatment to identify any indication of a well breach. If diagnostic monitoring reveals that a breach has occurred, then the operator shall immediately shut-in the well, isolate the perforated interval, and notify the DOGGR and the Regional Water Quality Control Board with the specified information.

Section 1788, Required Public Disclosures, requires the operator to publicly disclose specified information within 60 days after the cessation of a well stimulation treatment, including but not limited to the following:

- (9) The trade name, supplier, concentration, and a brief description of the intended purpose of each additive contained in the well stimulation fluids used.
- (10) The total volume of base fluid used during the well stimulation treatment.
- (11) Identification of whether the base fluid is water suitable for irrigation or domestic purposes, water not suitable for irrigation or domestic purposes, or a fluid other than water.
- (12) The source, volume, and specific composition and disposition of all water associated with the well stimulation treatment, including all specified information therein.
- (13) Identification of any reuse of treated or untreated water for well stimulation treatments and well stimulation treatment-related activities.
- (14) The specific composition and disposition of all well stimulation treatment fluids, including waste fluids, other than water.
- (15) Any radiological components or tracers injected into the well as part of the well stimulation treatment, a description of the recovery method, if any, for those components or tracers, the recovery rate, and specific disposal information for recovered components or tracers.
- (16) The radioactivity of the recovered well stimulation fluids, and a brief description of the equipment and method used to determine the radioactivity.
- (17) For each stage of the well stimulation treatment, the measured and true vertical depth of the location of the portion of the well subject to the well stimulation treatment and the extent of the fracturing or other modification, if any, surrounding the well induced by the treatment.
- (18) The estimated volume of well stimulation treatment fluid that has been recovered.
- (19) A complete list of the names, Chemical Abstract Service numbers, and maximum concentration, in percent by mass, of each and every chemical constituent of the well stimulation treatment fluids used. If a Chemical Abstract Service number does not exist for a chemical constituent, the operator may provide another unique identifier, if available.

Finally, the proposed regulations require operators to perform ongoing monitoring of a well after a stimulation treatment and to immediately inform the DOGGR and the RWQCB, conduct



diagnostics, and take all appropriate measures to prevent contamination of protected water or loss of hydrocarbon resources. Tracking of seismic activity during and after well stimulation treatment must be performed using the California Integrated Seismic Network and require evaluation if an earthquake larger than magnitude 2.7 occurs within the vicinity of a well stimulation treatment (14 CCR 1785.1). If an earthquake of magnitude 2.7 or greater occurs within a specified area around the well, then further hydraulic fracturing in the area are suspended until the Division, in consultation with the California Geologic Survey, determines that there is no indication of a heightened risk of seismic activity from hydraulic fracturing. Materials used in well stimulation are subject to storage, handling and reporting requirements (14 CCR 1786). Well monitoring must be performed after each well stimulation treatment is completed, including pressure data and diagnostic testing, to verify that the well has not been breached (14 CCR 1787).

As stated above, each well operator must disclose, within 60 days after a well stimulation treatment is completed, information regarding the source, volume and composition and disposition of well stimulation fluids, including, but not limited to, hydraulic fracturing fluids, acid well stimulation fluids, and flowback fluids (14 CCR 1788). However, Section 1788(c) provides that an operator is not required to disclose information found in well records subject to confidential treatment under Public Resources Code Section 3234

### ***Senate Bill 1281, Disclosure of Oil and Gas Water Use and Disposal***

Senate Bill 1281 (SB 1281), effective January 2015, amended Sections 3226.3 and 3227 of the Public Resources Code to require that (1) the DOGGR provide the SWRCB with an annual “inventory of all unlined oil and gas field sumps” and (2) well operators provide the DOGGR with quarterly information regarding the source and disposition of water produced by or used in oil and gas production in addition to existing obligations to report gas and oil production and produced water information on a monthly basis. The new quarterly reporting requirements include information regarding (a) the source and volume of any water, including produced water (also subject to monthly reporting) used to generate or make up the composition of any injected fluid or gas, identified by water source if more than one water source is used; (b) the volume of untreated water suitable for domestic or irrigation purposes used in oil and gas operations; (c) the treatment of water and the use of treated or recycled water in oil and gas field activities, including, but not limited to, exploration, development, and production; and (d) the specific disposition of all water used in or generated by oil and gas field activities, including water produced from each well as reported in an operator’s monthly reports, and separated by volume of disposition if more than one disposition method is used.

The amendments retain certain previous monthly reporting requirements in Section 3227, including (1) the amount and gravity of oil, gas and water, and the number of days fluid was produced from each well; (2) the number of drilling, producing, injecting, or idle wells owned or operated by a person subject to reporting requirements; (3) the disposition of gas produced from each field; (4) the disposition of produced water in each field; and (5) the amount of fluid or gas injected into each well used for enhanced recovery, underground storage of hydrocarbons, or wastewater disposal. The DOGGR has collected and reported the monthly data described in Section 3227 for several years. The DOGGR has indicated that the new information required by SB 1281 would be published after the close of each quarterly reporting period.

## **Local**

### ***City of Culver City General Plan***

#### **Land Use Element**

The *City of Culver City General Plan Land Use Element* contains policies that address a number of diverse issues. Listed below is the policy that is considered to address water quality, as relevant to the Project site:

**Policy 1.B: Protect** the City's residential neighborhoods from the encroachment of incompatible land uses and environmental hazards which may have negative impacts on the quality of life (such as traffic, noise, air pollution, building scale and bulk, and visual intrusions).

### ***Culver City Municipal Code***

The Culver City Municipal Code has several requirements governing storm water management. Section 5.05.035 of the Code requires any discharger described in any general storm water permit addressing such discharges to comply with the discharge permit. This Section also contains requirements concerning construction storm water runoff. Best Management Practices (BMPs) shall control runoff from construction activities and a Local Storm Water Pollution Prevention Plan (LSWPPP) and Wet Weather Erosion Control Plan (WWECP) for construction activities shall be submitted, reviewed, and approved prior to building or grading permits being issued. Section 5.05.040 of the Code describes the requirements for a Standard Urban Stormwater Mitigation Plan (SUSMP).

### ***County of Los Angeles Baldwin Hills Community Services District Regulations and Settlement Agreement***

Activities conducted by the Inglewood Oil Field Operator in the County IOF are mandated by the requirements of the Baldwin Hills Community Services District (CSD) and Settlement Agreement and Mutual Release (Settlement Agreement). In 2008, the Los Angeles County Board of Supervisors approved the CSD establishing development standards and operating procedures for oil and gas production operations for the County IOF and certified the related EIR. Following the actions of the Los Angeles County Board of Supervisors, Culver City and other parties joined together in a lawsuit challenging the adequacy of the EIR and its mitigation measures. In 2011, a settlement of the litigation was reached which supplements the CSD and provides for enhanced regulations. The County's regulations are not applicable to activities within the City of Culver City; therefore, the CSD requirements do not apply to the Project Site. However, the Oil Field Operator is applying these requirements throughout the Inglewood Oil Field and therefore, these requirements are mentioned to provide context for activities that may already be occurring within the Project Site. The Oil Field Operator is mandated to comply with the following CSD requirements in the County IOF:

- “. . . develop, implement, and carry out a groundwater quality monitoring program for the oil field that is acceptable to the director and consistent with all requirements of the Regional Water Quality Control Board.”
- “. . . the operator shall install and maintain groundwater monitoring wells in the vicinity of each surface water retention basin” and

- “Such monitoring wells shall be completed to the base of the permeable, potentially water-bearing, alluvium, Lakewood Formation, and San Pedro Formation, and to the top of the underlying, non-water bearing Pico Formation. . .”

A regular groundwater monitoring reporting program is also required by the CSD in addition to surface water management and monitoring requirements, including a storm water pollution prevention plan; a spill prevention, control, and countermeasure plan; and a hydrological analysis to evaluate potential changes in drainage patterns and runoff. A water management plan must also be established for conservation and BMPs.

#### **4.8.4 SPECIFIC PLAN AND REGULATORY REQUIREMENTS**

##### **Specific Plan Drilling Regulations**

**Section 10. Construction and Grading Permits.** The Operator shall be required to obtain the following construction and grading permits:

- B.** A grading permit from the City's Department of Public Works for all grading, except as defined in the Grading Guidelines as adopted by the Los Angeles County Department of Public Works. Grading design and grading plan preparation shall conform to the requirements of the Los Angeles County Grading Guidelines. A site specific hydrologic analysis may be required as described in Section 27.

**Section 13. Sumps.** It shall be unlawful for any person, firm, or corporation to construct or cause to be constructed, to use or cause to be used, or to maintain or cause to be maintained, any permanent sump hereafter constructed or erected, for the purpose of storing petroleum or flammable liquids or well stimulation flowback liquids.

**Section 15. Tanks.**

- F. Leak Detection and Control Plan.** Within 180 days of the date of approval of Comprehensive Drilling Plan, or at such later date as may be approved by the City's Fire Chief, for good cause shown, the Operator shall design, implement, and comply with a Leak Detection and Control Plan, to be submitted to and approved by the Fire Chief, for controlling and detecting tank bottom leaks on all existing and new tanks. The Operator may use a combination of methods including but not limited to diversion walls, dikes, tank foundations of concrete or gravel, and a tank bottom leak detection system in compliance with Title 14 of the California Code of Regulations Section 1773, or subsequently enacted state regulations regarding tank bottom leaks. The Operator shall document its approach for identifying, monitoring, and correcting tank leaks and submit this information to the Community Development Director and Fire Chief as specified in the Drilling Use Permit.

- G. Dikes and Walls Surrounding Storage Tanks.** The Operator, shall construct and maintain dikes or walls around all storage tanks, clarifying tanks, or tanks used in connection with the production of oil. Dikes and walls shall be constructed and maintained to meet the standards of the NFPA and current DOGGR requirements. (See also Section 18, Dikes and Retaining Walls, and Section 20, Safety and Risk of Upset)

**Section 25. Groundwater Monitoring.** Within 180 days of the date of approval of the Comprehensive Drilling Plan or at such later date as may be approved by the Public Works Director/City Engineer, for good cause shown, the Operator shall develop, implement, and carry out a Groundwater Monitoring Program for the Drilling Project site or Oil Field, which shall be submitted to the Public Works Director/City Engineer. The Operator's Groundwater Monitoring Program shall be consistent with all requirements of the RWQCB, and shall be submitted to the Water Replenishment District of Southern California, the West Basin Municipal Water District, and Golden State Water Company for review. Pursuant to the approved Program, the Operator shall install and maintain groundwater monitoring wells in the vicinity of each surface water retention basin, which is permitted by the RWQCB. Such monitoring wells shall be completed to the base of the permeable, potentially water-bearing, alluvium, Lakewood Formation, and San Pedro Formation, and to the top of the underlying, non-water bearing Pico Formation, as determined by a licensed California Engineering Geologist to be approved by the Public Works Director/City Engineer. The Program shall address water level and water quality, and shall include deep zone water level monitoring within the Pico Formation and other cap rock units on the west side of the Newport Inglewood Fault Zone. The RWQCB and the Public Works Director/City Engineer shall be advised of the results of such monitoring on a quarterly basis and shall be immediately advised if such monitoring indicates a potential problem. This requirement may be satisfied if the Operator can demonstrate, to the satisfaction of the Public Works Director/City Engineer that a Groundwater Monitoring Program is being implemented and has been approved for other parts of the Oil Field and can conclusively show that the Groundwater Monitoring Program applies to the Oil Field within the jurisdiction of the City. Additional information may be required by the Public Works Director/City Engineer to demonstrate compliance with this Section.

**Section 26. Surface Water Management.** Within 180 days of the date of approval of the Comprehensive Drilling Plan or at such later date as may be approved by the Public Works Director/City Engineer, for good cause shown, the Operator shall submit a Surface Water Management Plan, to be reviewed and approved by the Public Works Director/City Engineer, that documents best water management practices. Any modifications to the Plan shall be submitted to the Public Works Director/City Engineer for review and approval.

- A.** The Surface Water Management Plan shall include, but is not limited to the following:
- a.** Water conservation measures;
  - b.** Provisions for the use of a drip irrigation system;
  - c.** Provisions for the use of surface water runoff in the retention basins for dust suppression and landscaping;
  - d.** Provisions prohibiting the use of Produced Water from Wells that have undergone a Well Stimulation Treatment for the purpose of irrigation;
  - e.** Provisions addressing the availability of reclaimed water at the Drilling Project site and use of such water to the greatest extent technically feasible if and when it becomes available; and



- f. Any additional information required by the Public Works Director/City Engineer.
- B. Once a Drilling Use Permit is approved, the Operator and Public Works Director/City Engineer shall review the Water Management Plan every three years to determine if modifications are required.
- C. If a source of reclaimed water should become available in subsequent years, the Operator shall be required to modify the Plan to accommodate the use of reclaim water to the greatest extent technically feasible.
- D. This requirement may be satisfied if the Operator can demonstrate, to the satisfaction of the Public Works Director/City Engineer, that a Surface Water Management Plan is being implemented and has been approved for other parts of the Oil Field and can conclusively show that the Surface Water Management Plan applies to the Oil Field within the jurisdiction of the City. Additional information may be required by the Public Works Director/City Engineer to demonstrate compliance with this Section.

**Section 27. Stormwater and Drainage Management**, requires the following:

- A. **Storm Water Pollution Prevention Plan (SWPPP).** The Operator shall at all times maintain and implement all provisions of a SWPPP that has been inspected by the RWQCB and the Public Works Director/City Engineer. Concurrently with the submission of the Comprehensive Plan, and updated annually with each Annual Consolidation and Drilling Plan, the Operator shall provide the Public Works Director/City Engineer with a copy of the SWPPP, and any future modifications, revisions, alterations, or replacements. This requirement may be satisfied if the Operator can demonstrate, to the satisfaction of the Public Works Director/City Engineer, that a SWPPP is being implemented and has been approved for other parts of the Inglewood Oil Field and can conclusively show that the SWPPP applies to the Oil Field within the jurisdiction of the City. Additional information may be required by the Public Works Director/City Engineer to demonstrate compliance with this Section.
- B. **Spill Prevention, Control, and Countermeasure Plan (SPCCP).** The Operator shall maintain and implement all provisions of a SPCCP, which meets the requirements of the Local California Unified Program Agency and any other applicable laws or regulations. Concurrently with the submission of the Comprehensive Drilling Plan, the Operator shall provide the Fire Chief with a copy of the SPCCP. Any future modifications, revisions, alterations, or replacements to the SPCCP (to be reviewed at least biennially) shall be submitted to the Fire Chief.
- C. **Hydrologic Analysis.** A site-specific hydrologic analysis shall be completed to evaluate anticipated changes in drainage patterns and associated increased runoff at the site for any new grading that results in the loss of vegetated, sandy, permeable ground areas, which could alter surface runoff at the site. The analysis shall be completed consistent with Standard Urban Storm Water Mitigation Plan regulations, as specified by the Public Works Director/City Engineer. The hydrologic analysis shall be submitted to the Public Works Director/City Engineer for review and approval prior to conducting any Drilling Project activities. Any new grading

that requires a hydrologic analysis shall not occur until the Public Works Director/City Engineer approves the hydrologic analysis.

**Section 32. Well Stimulation Treatments.**

**(NOTE:** *The EIR for the Proposed Inglewood Oil Field Specific Plan Project ("Specific Plan EIR") will evaluate the potential environmental impacts of conducting Well Stimulation Treatments, within the Oil Field, performed in a manner consistent with DOGGR's Senate Bill 4 regulations as of July 1, 2015, and the site-specific requirements set forth in this draft Specific Plan. In taking action on the Specific Plan, the City Council will consider the available information, including the Specific Plan EIR, in making a determination as to whether and upon what terms the adopted Specific Plan would allow Well Stimulation Treatments to be conducted within the Oil Field.***)**

**Section 48. Abandoned Well Testing,** requires the following:

The Operator shall conduct quarterly testing of abandoned wells for hydrocarbon vapor and any liquid leaks. The first quarterly testing shall be completed within 120 days of the date of approval of the Comprehensive Drilling Plan. The procedures and equipment for such testing shall be reviewed and approved by the Public Works Director/City Engineer. Abandoned wells that are found to be leaking hydrocarbons shall be reported to the Public Works Director/City Engineer and the DOGGR within 12 hours of the abandoned well testing. The DOGGR shall determine if the well needs to be re-abandoned. If directed by the DOGGR, the Operator shall re-abandon the well in accordance with DOGGR rules and regulations. Any abandoned well that is not found to be leaking hydrocarbon vapors or any liquid for eight consecutive quarters (after a hydrocarbon leak is found), shall thereafter be tested on annual basis and such test results shall be submitted to the Public Works Director/City Engineer.

**Regulatory Requirements**

**RR HYD-1** As per Section 5.05.035, Requirements for Industrial/Commercial and Construction Activities, of the Culver City Municipal Code:

- A. Each industrial discharger, discharger associated with construction activity, or other discharger described in any general storm water permit addressing such discharges, as may be granted by the U.S. Environmental Protection Agency, the State Water Resources Control Board, or the Regional Board shall comply with all requirements of such permit.
  - 1. Each discharger identified in an individual National Pollutant Discharge Elimination System (NPDES) permit shall comply with and undertake all activities required by such permit.
  - 2. Proof of compliance with any such permit may be required in a form acceptable to the Director, prior to the issuance of any grading or building permit, or any other type of permit or license issued by the City.
- B. Storm water runoff containing sediment, construction materials or other pollutants from the construction site and any adjacent staging, storage or parking areas shall be reduced to the maximum extent practicable (MEP). The following requirements shall apply to all construction projects within

the City and shall be required from the time of land clearing, demolition or commencement of construction until receipt of a Final Inspection or Certificate of Occupancy, whichever is the last required City approval:

1. Sediment, construction waste, trash and other pollutants from construction activities shall be reduced to the MEP.
  2. Structural controls, such as sediment barriers, plastic sheeting, retention ponds, filters, berms and similar controls, shall be utilized to the MEP in order to minimize the escape of sediment and other pollutants from the site.
  3. Between October 1<sup>st</sup> and April 15<sup>th</sup> of each year, all excavated soil shall be located on-site in a manner that minimizes the amount of sediment running onto the street, drainage facilities or adjacent properties. Soil piles shall be bermed or covered with plastic or similar materials until the soil is either used or removed from the site.
  4. No washing of construction or other vehicles is permitted adjacent to a construction site. No water from the washing of construction vehicles or equipment on the construction site is permitted to run off the construction site and enter the municipal storm drain system.
  5. Trash receptacles must be situated at convenient locations on construction sites, and must be maintained in such a manner that trash and litter does not accumulate on-site nor migrate off site.
  6. Erosion from slopes and channels must be controlled through an effective use of Best Management Practices (BMPs).
- C. The property owner or his/her authorized representative must certify, in a form acceptable to the Director, that BMPs to control runoff from construction activities will be implemented to the MEP prior to the issuance of any building or grading permit.
- D. A Local Storm Water Pollution Prevention Plan (LSWPPP) and Wet Weather Erosion Control Plan for construction activities shall be submitted to the Director consistent with the Municipal NPDES Permit. Such plans must be reviewed and approved by the Director prior to the issuance of any building or grading permit.

## RR HYD-2

As per 5.05.040, Standard Urban Stormwater Mitigation Plan (SUSMP) Requirements for New Development and Redevelopment Projects, of the Culver City Municipal Code:

- A. **Requirement for Storm Water Mitigation Plan.** The following categories of development or redevelopment projects shall require a storm water mitigation plan that complies with the most recent Regional Board-approved SUSMP: (2) Commercial/industrial development in excess of one acre of disturbed area.
- B. **Post-Development Storm Water Mitigation.** A site-specific plan to mitigate post-development storm water pollution for new development and redevelopment projects not requiring a SUSMP, but which may potentially have adverse impacts on post-development storm water quality shall be

required where one or more of the following project characteristics exist:  
(d) outdoor handling or storage of hazardous materials.

The DOGGR determined that several of the mitigation measures developed in the SB4 EIR should be converted into formal regulations, including SB4 GW-4b (Install a Well Seal across Protected Groundwater for New Wells Subject to Well Stimulation Treatments) and SB4 SWR-1b (Surface Water Protection). These measures are intended to be applied without change throughout the State because (1) they address the direct environmental effects of well stimulation treatment; (2) they relate to activities that occur physically very close to the oil and gas wells; and (3) they already reflect the lessons of a considerable amount of scientific input and empirical experience. These measures are temporarily included within the DOGGR Draft Mitigation Policy Manual (see Appendix B-2 of this Draft EIR) until such time as formal regulations are duly adopted and in place. Interim MM HYD-7 and MM HYD-8, which correspond to the SB4 measures listed below, will be implemented and enforced by the City until such time as DOGGR adopts the measures as formal regulations.

**SB4 GW-4b Install a Well Seal across Protected Groundwater for New Wells Subject to Well Stimulation Treatments.** DOGGR shall require as a condition of permit approval that the applicant demonstrate to DOGGR's satisfaction that a well used for well stimulation treatments contains an annular 500-foot cement seal extending across the base of protected groundwater and that the integrity of the seal will prevent unintended migration of fluid. This applies to all new wells that will be subjected to well stimulation. For new shallow wells drilled in areas where protected groundwater is present, this requirement is amended to require cementing the entire casing string from the bottom of the well to the surface. DOGGR will determine the proper casing and cementing depth for the protection of protected groundwater. In no event will this requirement conflict with existing DOGGR regulations requiring casing depth limits for the adequate anchorage of blow-out prevention equipment and safe drilling operations.

DOGGR must approve the method for determining the base of protected groundwater, but will consider best management practices using available data on produced water quality and/or industry-accepted interpretation methods of geophysical (electric) logs. Current well construction requirements found in DOGGR's regulations (see CCR Title 14, Sections 1722.2 through 1722.6) require cement placement in surface casing from the base of the casing to the surface and preferably through the freshwater zone (3,000 mg/L TDS). Furthermore, DOGGR regulations require the use of a second string of casing if the surface casing does not extend through the base of freshwater (3,000 mg/L TDS). However, the depth of subsequent casing strings might not extend through the zone of protected groundwater. This mitigation measure (MM GW-4b) will result in a seal across the base of protected groundwater (<10,000 mg/L TDS) for all new wells subject to well stimulation treatment. Requiring a 500-foot seal across the base of protected groundwater would protect groundwater resources in deeper wells.

**SB4 SWR-1b Surface Water Protection.** The applicant for a well stimulation treatment permit shall submit to DOGGR maps, photographs, and other information, prepared by a qualified hydrologist acceptable to DOGGR, that describe or show any perennial, intermittent or ephemeral streams or other water bodies within 300 feet of the proposed well stimulation treatment and of any surface disturbance associated with the proposed stimulation treatment. Information provided shall include, as a minimum: (a) water body name, if applicable; (b) characteristics (stream, pond,



lake, wetland); (c) whether the water body is perennial, intermittent or ephemeral; (d) normal summer and winter flow rate, if available, or estimated; (e) habitat characteristics (required in MM BIOT-1a); (f) distance and ground slope between the well pad and water body; (g) contributing watershed area; and (h) expected drainage patterns at the location of the proposed well stimulation treatment. DOGGR shall consider this information in determining whether to approve the proposed well stimulation treatment permit, and shall require that protection and minimization of potential impacts to identified surface water be addressed in the site layout design, Stormwater Pollution Prevention Plan, worker training, spill contingency and response plans, and site restoration plans.

DOGGR shall not approve applications for well stimulation where the well pad will be less than 100 feet from a perennial water body, or an intermittent or ephemeral water body, if DOGGR determines, based on the qualified hydrologist's evaluation, that open surface water or flow is normally present at that location and season at the scheduled time for well stimulation. Normally present means day-to-day perennial or seasonal base flow or presence of surface water.

Exceptions to the 100-foot setback from surface waters may be granted at DOGGR's discretion if the applicant can demonstrate to DOGGR's satisfaction that a setback of 100 feet from these surface water resources cannot feasibly be achieved and/or is unnecessary to avoid significant effects on potentially affected water bodies (e.g., because construction of a temporary or permanent berm is an adequate substitute for a setback or that existing structures at the well site will operate as a de facto berm). The applicant shall submit a written justification for a proposed narrower setback, along with any proposed substitute mitigation intended to avoid significant effects on surface water resources. The justification shall explain why the proposed narrower setback is as wide as is feasible and/or is unnecessary under the circumstances. DOGGR shall not issue a well stimulation treatment permit for a proposal with a setback of less than 100 feet unless DOGGR independently determines, based on substantial evidence, that a 100-foot setback is infeasible or unnecessary, and that the proposed well stimulation, with or without any relevant mitigation measure(s) or condition(s) of approval, will not cause a significant effect to the potentially affected water bodies. In making its own determination regarding whether a 100-foot setback or a relevant potential lesser setback is infeasible, DOGGR shall consider, at a minimum, information relating to the contributing watershed area, local climate, past disturbance in the affected area, existing protections and controls, ground slope, relevant economic, legal, social, and technological factors, any RWQCB recommendations, habitat conditions, or any other information deemed appropriate by the applicant and accepted as such by DOGGR, consistent with the concept of "feasibility" as it occurs in CEQA, the State CEQA Guidelines, and CEQA case law.

In assessing the feasibility of, and need for, a 100-foot setback, DOGGR may, at its discretion, consider groups of permit applications, even for an area as large as an entire established oil or gas field. In doing so, DOGGR may consider maps, photographs, and other relevant information supplied by the applicant(s) or DOGGR. Such a comprehensive evaluation, if approved by DOGGR and at DOGGR's discretion, may result in compliance with this mitigation measure for more than one proposed permit, provided that practical assurance is given that all individual permits within any larger group of permits will comply with the requirements of this measure.

After the issuance of a well stimulation treatment permit and within 60 days after the cessation of a well stimulation treatment, the operator shall submit to DOGGR a map and other information depicting or describing surface water resources and the actual surface disturbance areas to document the actual setback or the extent of disturbance, if any, in surface waters. Where the surface disturbance has encroached into the minimum setback required by the condition(s) of approval, DOGGR shall determine whether the extent and effect of the disturbance are sufficient to require the applicant to undertake some sort of environmental restitution or remediation that could achieve indirectly the practical equivalent of the level of surface water protection that the setback area in the permit condition(s) was intended to achieve. In deciding what kind of restitution or remediation, if any, is appropriate, DOGGR may consult with the State Water Resources Control Board, a Regional Water Quality Control Board, or the Department of Fish and Wildlife.

#### **4.8.5 THRESHOLDS OF SIGNIFICANCE**

##### **Thresholds Addressed in the Initial Study**

The Initial Study prepared for the Project (included in Appendix A-1) concludes that the Project would have no impact on the following threshold, and further analysis of these thresholds is not required in the Draft EIR:

- Would the Project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- Would the Project place within a 100-year flood hazard area structures which would impede or redirect flood flows?
- Would the Project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?
- Would the Project expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?

##### **Thresholds Addressed in this Environmental Impact Report**

The Initial Study for the Project concludes that additional project-level analysis of the following thresholds of significance is required in this Draft EIR. These thresholds are mostly based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines along with some additional thresholds determine to be relevant to the Project. A project would normally have a significant adverse environmental impact on hydrology and water quality if it would

**Threshold 8-1:** Violate any water quality standards or waste discharge requirements.

**Threshold 8-2:** Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

- Threshold 8-3:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite.
- Threshold 8-4:** Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite.
- Threshold 8-5:** Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of pollutant runoff.
- Threshold 8-6:** Otherwise substantially degrade water quality.
- Threshold 8-7:** Adversely impact groundwater quality through surface or subsurface spills or leaks during well stimulation.
- Threshold 8-8:** Cause migration of well stimulation fluids or formation fluids including gas to protected groundwater through non-existent or ineffective annular well seals.
- Threshold 8-9:** Cause migration of well stimulation fluids or formation fluids including gas to protected groundwater through damaged or improperly abandoned wells.
- Threshold 8-10:** Cause improper disposal of flowback in injection wells that could potentially impact groundwater quality.
- Threshold 8-11:** Cause an inability to identify specific impacts to groundwater quality from well stimulation activities.

#### **4.8.6 IMPACT ANALYSIS**

**Threshold 8-1: Would the project violate any water quality standards or waste discharge requirements?**

The Specific Plan allows for a various activities to be performed at the same time. This situation is being analyzed as the Maximum Buildout Scenario. Under the Maximum Buildout Scenario, 1 well pad would be developed; 2 wells per year for the first 2 years and up to 3 wells per year after that may be drilled or redrilled for a maximum of 30 new wells to be drilled or redrilled; 1 well could be hydraulically fractured; and no more than 2 rigs being used for rework, maintenance, and/or well abandonment. No wells are assumed to be plugged or abandoned under the Maximum Buildout Scenario.

Various pollutants of concern may be generated by Project-related activities, including sediment, trace metals, pesticides, trash/debris, petroleum hydrocarbons, and other chemicals used in oil/gas field operations. The potential sources of impacts to surface water quality include, but may not be limited to, sediment-laden runoff from earth-moving activities during well pad development; potential spills of hazardous materials, lubricants, and/or petroleum hydrocarbons from well drilling and other construction activities; trash and debris from construction and operations; leaking tanks and transmission piping; oil and/or produced water from pipeline or tank ruptures; percolation of liquids through basin bottoms; leaking well seals; and metals from leaking equipment and vehicles.

Table 4.8-2 below provides a summary for the past five years of reported petroleum or chemical/hazardous material releases for County IOF. There has been one reportable release at the Project Site in the last five years: on November 24, 2013, an interfacility pipeline between the FM O&G "Packard" facility in the City of Los Angeles and the Inglewood Oil Field leaked seven barrels of produced water that drained onto the street and then into the storm drain near Blackwelder Street (intersection of La Cienega and Fairfax Avenue). The produced water did not reach Ballona Creek.

**TABLE 4.8-2  
INGLEWOOD OIL FIELD REPORTED PETROLEUM  
OR CHEMICAL/HAZARDOUS MATERIAL RELEASES  
(LOS ANGELES COUNTY PORTION)**

Date	Reported To	Volume	Location/Comments
06/11/2010	CAEMA LACoFD CUPA DOGGR	2.25 bbls oil 208 bbls produced water	Pipeline leak on pool line from the LAI 220 setting. Released fluids contained in a containment basin on site.
10/06/2010	CAEMA LACoFD CUPA DOGGR SCAQMD	7.4 bbls oil 90 bbls produced water	T-2 Tank overflow – all released fluids were isolated and contained on site.
06/24/2011	CAEMA LACoFD CUPA DOGGR	30 bbls oil	A valve on a tank failed causing the tank to overflow. All released oil was isolated and contained on site.
02/25/2012	CAEMA LACoFD CUPA DOGGR	90 bbls produced water	An injection trunk line leaked and approximately 2 bbls of the 90 bbls of produced water went out the front gate, down Stocker Street and back onto the lease.
03/04/2013	CAEMA LACoFD CUPA DOGGR	40 gallons oil 378 gallons produced water	A pool line leaked 40 gallons of oil and 378 gallons of produced water. All released fluids were isolated and contained on site.
05/01/2013	CAEMA LACoFD CUPA DOGGR	2 bbls oil	2 bbls of oil leaked from the LACT pipeline near well LAI1 197. All released oil was isolated and contained on site.
05/10/2013	CAEMA LACoFD CUPA DOGGR	1 bbl produced water	A produced water line leaked 1 bbl of produced water. All released fluids were contained and isolated on site.
09/20/2013	CAEMA LACoFD CUPA DOGGR SCAQMD	30 bbls oil 600 bbls produced water	The LAI gunnite tank released oil and produced water to a containment basin on site. All released material was isolated and contained on site.
02/04/2014	CA OES NRC LACoFD CUPA DOGGR	5 bbls oil	5 bbls of oil leaked from a pipeline from the BC Tank setting. All released oil was isolated and contained on site.
03/07/2014	CA OES LACoFD CUPA DOGGR	3 bbls oil 10 bbls produced water	A flow line to well LAI1 429 released a mixture of oil and produced water. All released material was isolated and contained on site.
05/05/2014	CA OES NRC LACoFD CUPA DOGGR	>1 gallon produced water/oil mix	>1 gallon oil/water mix misted approximately 10 feet outside the FM O&G fence along La Cienega due to a pipeline leak.
05/08/2014	CA OES LACoFD CUPA DOGGR	25 bbls produced water	8-inch injection line released produced water near well LAI1 449. All of the produced water was isolated and contained on site.



**TABLE 4.8-2  
INGLEWOOD OIL FIELD REPORTED PETROLEUM  
OR CHEMICAL/HAZARDOUS MATERIAL RELEASES  
(LOS ANGELES COUNTY PORTION)**

Date	Reported To	Volume	Location/Comments
07/12/2014	CA OES	20 bbls produced water	8-inch trunk line release near La Cienega and IOF overpass. The incident was reported as the line misted into the air and there was potential for the produced water to get off site; however, all released fluid was isolated and contained on site.
02/23/2015	CA OES LACoFD CUPA DOGGR	10 bbls produced water	An injection trunk line released produced water from BC hill into a V-ditch along the north side of Stocker St. The water travelled west down Stocker St and back onto the field prior to La Cienega Blvd. All released fluid was contained on site.
03/27/2015	CA OES LACoFD CUPA DOGGR	40 bbls oil 600 bbls produced water	T-1 tank pump malfunction results in a release. All released material was isolated and contained on site.
09/25/2015	CA OES LACoFD CUPA DOGGR	2.6 bbls oil 6 bbls produced water	VRU VIC1 flow line leaked. All released material was contained and isolated on site.
bbl: barrel; CAEMA: California Emergency Management Agency; CA OES: California Office of Emergency Services; CUPA: Certified Unified Program Agency; DOGGR: California Division of Oil, Gas, and Geothermal Resources; LACoFD: Los Angeles County Fire Department; SCAQMD: South Coast Air Quality Management District; FM O&G: Freeport McMoran Oil and Gas, Inc.; IOF: Inglewood Oil Field. Source: FM O&G 2016.			

As shown above, the majority of the reportable releases within the Inglewood Oil Field involved the release of oil and/or produced water, most often from pipeline or tank leaks, and were contained within the Inglewood Oil Field. However, any released pollutants in storm water runoff could adversely impact on-site drainages and downstream waters.

### ***Earth-Moving and Grading Activities***

During earth-moving activities associated with well pad development, sediments can be released that are associated with exposing previously stable soils to potential mobilization or erosion by rainfall, runoff, or wind. Such earth-moving activities include removal of vegetation from the well pad site, grading portions of the well pad site, and trenching/excavating for infrastructure improvements, including oil, gas and water lines from newly developed wells to storage tanks at the Project Site or to processing facilities located in the County IOF. Any released pollutants in storm water runoff could adversely impact on-site drainages and downstream waters.

Earth-moving activity impacts to water quality would be minimized through compliance with compliance with RR HYD-1, which requires a NPDES permit and an LSWPPP and WWECP be in place during earth-moving activities. The LSWPPP and WWECC would include specific Best Management Practices to minimize erosion, sediment, and transport of sediment. Drilling Regulations Section 10 contains requirements for grading and soil disturbance, and Drilling Regulations Section 27 also requires the Oil Field Operator to have an SWPPP.

With compliance with Drilling Regulations Sections 10 and 27 and RR HYD-1, potential impacts to surface water quality due to earth-moving activities at the Project Site would be less than significant and no mitigation is required.

### ***Well Drilling, Completion, and Maintenance Activities***

As a part of the oil/gas extraction process, produced water is extracted through the wells. This water is usually saline and can be produced in high volumes relative to the amount of oil and gas produced. Currently, produced water from the Project Site is either stored in storage tanks until it can be sent to the water processing facility located in the County IOF or is sent to the water processing facility directly. Produced water would then be injected back into the original producing zone through the use of existing or new injection wells (LACDRP 2008).

Produced water often contains elevated levels of salts, hydrocarbons and trace elements. Trace elements, including boron, lithium, bromine, fluorine, and radium, also occur in elevated concentrations of some produced waters (DOI 2011). It should be noted that concentrations of these pollutants vary considerably depending on the location of the well and the extent of the additives contained in the water. Geography can be a key factor in whether a substance may exist in produced water. For example, while Texas and the Gulf Coast areas have the highest levels of naturally occurring radioactive materials (NORMs), only very low levels have been found in western states, including California (USGS 1999).

The well drilling process can result in discharge of drilling muds and fluids if a closed-loop system that captures and recirculates muds and fluids in storage tanks is not implemented. During well drilling and well completion activities, spills of drilling mud, concrete and sealants, hydrocarbons, produced water, as well as leaks from equipment, vehicles, chemical storage, tanks, and pipelines are potential sources of surface water contamination. Disposal of the drilling mud is generally managed at the end of the drilling process. Additives used in the well drilling process may be found in waste mud, and components from the formation, such as hydrogen sulfide and natural gas, may also be dissolved in the mud. Rock cuttings from the formations overlying the target formation may contribute contaminants to the drilling mud such as arsenic or metals.

Production wells require periodic large-scale maintenance. Well maintenance, including workovers, treatment, and redrills, requires the use of fluids similar to drilling fluid and is the largest miscellaneous source of waste. These waste fluids may contain a range of chemicals (depending on the maintenance activity undertaken) and naturally occurring materials (i.e., trace metals). Scale is primarily comprised of sodium, calcium, chloride and carbonate; however, trace contaminants such as barium, strontium, and radium may be present. Also, corrosion inhibitors and stimulation compounds are flushed through the well. Corrosion-resistant compounds of concern include zinc carbonate and aluminum bisulfate. In addition, painting- and cleaning-related wastes may be generated during workovers.

Table 4.8-3 below provides a general listing of potential water pollutants that may be generated on-site at the various stages of oil and natural gas operations. The potential pollutants discussed below could be released into the environment through spills, leaks, or accident conditions.

**TABLE 4.8-3  
POTENTIAL POLLUTANTS IN WASTE WATER**

Process	Potential Pollutants in Waste Water
Well Drilling/Development	Drilling muds, organic acids, alkalis, diesel oil, crankcase oils, acidic stimulation fluids (hydrochloric and hydrofluoric acids)
Well Production	Produced water possibly containing heavy metals, radionuclides, dissolved solids, oxygen-demanding organic compounds, and salts; Additives such as biocides, lubricants, corrosion inhibitors; Wastewater containing glycol, amines, salts, and untreatable emulsions. Escaping oil and brine.
Well Maintenance	Completion fluid, wastewater containing well-cleaning solvents (detergents and degreasers), paint, stimulation agents
Sources: USEPA 2000.	

As previously shown in Table 4.8-2 above, spills and leaks of oil and produced water have occurred within the Inglewood Oil Field within the recent past. If accidental spills occur during the well operations or maintenance, or through on-site pipeline rupture, pollutants from produced water and/or crude oil could contaminate surface waters, which would be a significant impact.

MM HYD-1 requires that the Oil Field Operator conduct all well drilling activities through a closed-loop drilling and containment system of temporary or permanent tanks in order to avoid potential spillage of drilling muds and fluids. This closed loop system would reduce potential impacts associated with spills and leaks during well drilling.

There are many industry standard practices that would be implemented during well operations and maintenance to minimize the risks associated with accidental spills, and various BMPs would be required to prevent accidental contamination of surface waters. State requirements through CCR Title 14 and other mandates are discussed above, including spill contingency requirements, pipeline safety standards, and the DOGGR requirements and engineering standards published and regularly updated by American Petroleum Institute associated with oil and gas-related pipelines, tanks, trucks, storage, separation and treatment facilities. Additionally, the Drilling Regulations set forth various requirements to protect surface water quality, as discussed above.

As required by RR HYD-2, the Oil Field Operator must prepare a site specific SUSMP detailing the installation and maintenance of post-construction treatment control BMPs intended to infiltrate or treat storm water runoff, control peak flow discharge, and reduce the post-development discharge of pollutants from storm water conveyance systems. Currently, storm water is collected in the Dabney retention basin located on the eastern portion of the Project Site. All storm water from developed portions of the Project Site are designed to drain into this basin, and no runoff from the developed areas would sheetflow into surrounding land uses.

Drilling Regulations Section 13 prohibits the construction or use of any permanent sump for the purpose of storing petroleum or flammable liquids or well stimulation flowback liquids. Drilling Regulations Section 15 and Drilling Regulations Section 18 requires storage tanks or containers to be surrounded by impervious, lined or coated masonry or reinforced concrete walls, or dikes, so designed, constructed and maintained as to confine at least 110 percent capacity of the largest tank or container within such masonry or reinforced concrete walls or dikes.

Drilling Regulations Section 26 prohibits the use of produced water from wells that have undergone a well stimulation treatment for the purpose of irrigation. Drilling Regulations Section 27 requires a SPCCP be developed which meets the requirements of the Local California Unified Program Agency and the USEPA. Blow-out prevention systems would be used during the drilling operations to prevent the uncontrolled release of reservoir fluids and to shut off the flow to prevent spills and releases of materials that could pollute surface waters. Such systems would be placed on each wellhead during drilling and removed after the well is established.

Compliance with state regulations, RR HYD-1, RR HYD-2, and Drilling Regulations, as well as implementation of MM HYD-1, would ensure that potential surface water quality impacts associated with well drilling, completion, stimulation, operations, and maintenance would be less than significant.

**Threshold 8-2: Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**

The Project would use potable water supplies for earth-moving activities (e.g., dust suppression), for initial well drilling, landscaping establishment, and for routine operations (e.g., oil production, maintenance). Water usages are included in Table 4.15-1 in Section 4.15, Utilities, of this Draft EIR. As described in Section 4.15, the availability and adequacy of potable water supplies for the Project's activities have been confirmed by the Cal American Water and Project-related potable demands would be less than significant (CAW 2016). As such, potable water requirements for Project would not result in a substantial depletion of groundwater supplies (i.e., potable water), and no mitigation is required.

Regarding groundwater extraction in the form of produced water, all operations would involve the re-injection of produced water back into the subterranean producing zone from which the water was originally extracted (i.e., waterflooding). Therefore, the producing zone would be replenished with the extracted water that was originally mixed with the oil and natural gas. As such, the operation of the wells would not substantially deplete groundwater supplies from hydrocarbon-bearing zones. Groundwater beneath the Project Site consists of limited, perched, non-potable aquifers. Groundwater from beneath the Project Site is not used as a source of potable water supplies for the City of Culver City or any other jurisdiction.

Lastly, the amount of impervious surfaces created on the Project site would be limited to the well pad foundations for pumping units at each well and well cellars for each pumping unit. While the Specific Plan allows up to 30 new wells to be drilled or redrilled, the location and the specifications regarding well pad foundations and well cellars is unknown at this time. However, there would be a small increase of new impervious surfaces when compared to the existing condition.

As outlined in Drilling Regulations Section 31, the Oil Field Operator is required to maximize the consolidation of wells as well as maximize the use of existing well pads. As such, the amount of additional impervious area created by the addition of new wells located on the Project Site would be minimized to the extent practical. As a result, a substantial increase in the amount of runoff from the Project Site is not expected, and therefore would not substantially reduce the amount of storm water infiltration that could occur on the Project Site. The Project's Maximum Buildout Scenario would not substantially interfere with groundwater recharge and no mitigation is required.

**Threshold 8-3: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite?**

There are no perennial or ephemeral streams located on the Project Site (LACDRP 2008), and there are no rivers located on the Project Site. Well pad development and new storage tank secondary containment would result in a small increase in impervious surface area for the Project Site when compared to the existing conditions.

As outlined in Drilling Regulations Section 27, a site-specific hydrologic analysis shall be completed to evaluate anticipated changes in drainage patterns and associated increased runoff at the Project Site for any new grading that results in the loss of vegetated, sandy, permeable ground areas, which could alter surface runoff at the Site. Any new grading that requires a hydrologic analysis shall not occur until the Public Works Director/City Engineer approves the hydrologic analysis. Thus, compliance with the Drilling Regulations would ensure that impacts associated altering existing drainage patterns would not result in substantial erosion or siltation onsite or offsite. Impacts would be less than significant and no mitigation is required.

**Threshold 8-4: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?**

As described under Threshold 8-3, while new well development on the Project Site may increase the impervious surface area, Drilling Regulations Section 27, requires a site-specific hydrologic analysis shall be completed to evaluate anticipated changes in drainage patterns and associated increased runoff on the Project Site. Thus, compliance with the Drilling Regulations would ensure that impacts associated altering existing drainage patterns would not result in substantial increased rate or amount of surface runoff in a manner which would result in flooding onsite or offsite. Impacts would be less than significant and no mitigation is required.

**Threshold 8-5: Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of pollutant runoff?**

As previously discussed, runoff from developed areas of the Project Site flows into the Dabney Lloyd basin (Basin 002 on the Project Site). Drilling Regulations Section 10 requires that prior to issuance of a grading permit from the City's Department of Public Works, grading design and grading plan preparation shall conform to the requirements of the Los Angeles County Grading Guidelines, and a site specific hydrologic analysis may be required as described in Drilling Regulations Section 27. Additionally, Drilling Regulations Section 20f requires that retention basins used in Oil Operations must be adequately sized, sited, inspected, maintained and operated to handle a 100-year storm event to the satisfaction of the Public Works Director/City Engineer. In addition, a requirement from the Baldwin Hills CSD EIR, requires that the retention basins throughout the Inglewood Oil Field, including the Dabney Lloyd Basin, have the capacity to handle a 100-year storm event without flooding (LACDRP 2015). Therefore, the Drilling Regulations would ensure that runoff water from the Project Site would not exceed the capacity of the Basin, and impacts would be less than significant. No mitigation is required.

Impacts associated with polluted runoff and associated surface water quality impacts are discussed under Threshold 8-1 above, and associated groundwater quality impacts are discussed under Thresholds 8-6 through 8-11 below.

**Threshold 8-6: Would the project otherwise substantially degrade water quality?**

**Threshold 8-7: Would the project adversely impact groundwater quality through surface or subsurface spills or leaks during well stimulation?**

Potential impacts to water quality from surface spills and leaks are discussed under Threshold 8-1 above. As previously discussed, produced water from the Project Site would be separated from oil and gas at the water treatment facility located on the County IOF. The treated produced water, including flowback from hydraulic fracturing, would then be re-injected back into the formation from which it came for the purposes of “waterflooding,” which facilitates the production of oil and also serves to minimize risks associated with subsidence when produced water is injected into the producing zone. Produced water often contains elevated levels of salts and hydrocarbons. Trace elements, including boron, lithium, bromine, fluorine, and radium, also occur in elevated concentrations of some produced waters (DOI 2011). Flowback from hydraulic fracturing can contain numerous contaminants, as listed in Table 4.7-4 in Section 4.7, Hazards, Hazardous Materials, Risk of Upset, in this Draft EIR. Concentrations of these pollutants vary considerably depending on the location of the well and the extent of the additives contained in the water. If accidental rupture, blowout, or improper functioning of wells in the City IOF would occur, petroleum hydrocarbons and other pollutants could contaminate groundwater.

Contamination of groundwater associated with oil and gas well operations most commonly occurs from the failure of the well casing due to faulty and improper installation and/or maintenance of the wells (see Threshold 8-8 below). A properly constructed well, which includes a cement sheath placed between the well casing and the borehole, would ensure zonal isolation. Zonal isolation means that the produced oil, gas, and water pumped from the producing geologic zone or strata (or the injection of produced water into the strata) would be isolated from other subsurface strata and prevented from migrating into other zones, including potable groundwater aquifers.

However, drilling muds and fluids could come into contact with groundwater prior to the installation of well casing and cement or in the event of a well failure during well construction or reworking. Discharges to groundwater could occur in the event of a well failure or blowout during construction. Spills have several pathways to potentially contaminate surface water or groundwater, including but not limited to overland flow to nearby drainages, soil contamination that eventually transports to surface waters, and soil contamination that eventually infiltrates to groundwater. It can take several years for spilled fluids to infiltrate soils and leach into groundwater; therefore, it may not be immediately apparent whether groundwater contamination will occur in the event of a spill. In the event of surface or subsurface spills or leaks of hydraulic fracturing fluids, potential impacts to water quality would be significant.

Spills and leaks associated with well stimulation techniques would be prevented, reduced, identified, and cleaned up in accordance with the same regulations as discussed under Threshold 8-1. The DOGGR regulations are summarized above and include tank, pipeline inspection and testing requirements, the preparation of spill contingency plans, secondary containment for stored materials onsite, notice of spills, and fluid and chemical storage and handling equipment inspections and maintenance. Surface containment vessels and secondary containment facilities must be maintained to applicable standards to prevent the accidental discharge of fluids recovered from well operations, including drilling-related flowback.



However, the only way to determine whether contaminants, including well stimulation fluids, has migrated to protected groundwater is through groundwater monitoring or by detecting the leak through annual testing. Currently, no wells within the Project Site are monitored, so current groundwater conditions beneath the Project Site are unknown.

Drilling Regulations Section 25 requires that the Oil Field Operator prepare a Groundwater Monitoring Program, which must be consistent with all requirements of the RWQCB, and shall be submitted to the Water Replenishment District of Southern California, the West Basin Municipal Water District, and other applicable groundwater management agencies for review. Pursuant to the approved Program, the Oil Field Operator must install and maintain groundwater monitoring wells in the vicinity of each surface water retention basin, and must include deep zone water level monitoring within the Pico Formation and other cap rock units on the west side of the Newport Inglewood Fault Zone.

In addition, MM HYD-2 requires that the Groundwater Monitoring Plan (see Drilling Regulations Section 25) that must be prepared by the Oil Field Operator in order to comply with the DOGGR and the RWQCB requirements must also comply with the following: (1) prepare a Project-specific Groundwater Monitoring Program to establish baseline conditions prepared by a licensed groundwater and surface hydrologist; (2) existing groundwater monitoring well MW-9 (and MW-13 if feasible) within the City IOF, must be evaluated and rehabilitated, if necessary, to include in the Groundwater Monitoring Program; (3) install a deep groundwater well within the City IOF to establish baseline deep groundwater conditions; (4) install additional shallow and deep groundwater monitoring wells (within the fresh zone) adjacent to the vertical portions of horizontal wells to establish baseline groundwater conditions; (5) review and adjust the Annual Drilling Plan so appropriate modifications can be made to the Project-specific Groundwater Monitoring Program; (6) provide continuous logging of new boreholes for groundwater wells to provide better subsurface understanding needed to evaluate saturated conditions or perched intervals; and (7) wells must be monitored on a regular (e.g., quarterly) basis to identify potential impacts to groundwater that may occur. If contamination is detected, the Oil Field Operator shall notify the City, the County of Los Angeles, and the RWQCB, as well as other appropriate local, state, and regional agencies, depending on the nature of the contamination.

While groundwater monitoring would not prevent impacts to groundwater quality from migration of well stimulation fluids or formation fluids including gas to protected groundwater, data from groundwater monitoring is expected to provide baseline conditions information, as well as information on the nature and extent of potential contamination and provide an early warning of a release. This would improve remedial response actions.

As discussed above, the DOGGR will implement new regulations consistent with SB4 SWR-1b (interim MM HYD-8), to address surface water quality impacts. Prior to issuance of a well stimulation permit, the DOGGR will require the Oil Field Operator to provide (a) water body name, if applicable; (b) characteristics (e.g., stream, pond, lake, wetland); (c) whether the water body is perennial, intermittent or ephemeral; (d) normal summer and winter flow rate, if available, or estimated; (e) habitat characteristics; (f) distance and ground slope between the well pad and water body; (g) contributing watershed area; and (h) expected drainage patterns at the location of the proposed well stimulation treatment. The DOGGR will consider this information in determining whether to approve the proposed well stimulation treatment permit, and will require that protection and minimization of potential impacts to identified surface water be addressed in the site layout design, Storm Water Pollution Prevention Plan, worker training, spill contingency and response plans, and site restoration plans.

Additionally, as discussed in Section 4.7, Hazards, Hazardous Materials, Risk of Upset, the DOGGR will convert into formal regulation HAZ-1a (Ensure that Spill Contingency Plan Provides Adequate Protection Against Leaks or Discharges of Dangerous Fluids and Other Potentially Dangerous Materials), which is applicable to the prevention of leaks. An interim MM HAZ-14, which corresponds to SB4 HAZ-1a, will be implemented and enforced by the City until such time as DOGGR adopts the measure as a formal regulation. There are also mitigation measures in the DOGGR's Draft Mitigation Policy Manual prepared pursuant to the SB4 EIR, which is included in Appendix B-2 of this Draft EIR, that are applicable to the analysis of surface water quality, as listed below (DOC 2015c):

- SB4 SWR-1a: Require Stormwater Pollution Prevention Plan
- SB4 SWR-2a: Implement Erosion Control Plan

The intent of these DOGGR SB4 measures are already incorporated into requirements set forth in Drilling Regulations of the Specific Plan, and no new or additional measures related to these SB4 MMs are required.

Compliance with state regulations, RR HYD-1, RR HYD-2, and Drilling Regulations, as well as implementation of MM HYD-2 and interim MM HYD-8, would ensure that potential water quality impacts associated with surface or subsurface spills and leaks would be less than significant.

**Threshold 8-8: Would the project cause migration of well stimulation fluids or formation fluids including gas to protected groundwater through non-existent or ineffective annular well seals?**

Although the constituents analyzed for the CSD Groundwater Monitoring Program, as discussed above, have not generally been detected, or when detected, have not been measured at or above MCLs in groundwater samples from Inglewood Oil Field monitoring wells, the existing groundwater monitoring program does not suffice to evaluate potential impacts from deep(er) subsurface activities and activities that may present a potential for impact outside the Inglewood Oil Field such as horizontal well stimulation or hydraulic fracturing. In addition, no wells within the Project Site are monitored, so current groundwater conditions beneath the Project Site are unknown.

The Project Site overlays the Santa Monica Subbasin, as discussed. As such, it is anticipated that the Santa Monica Subbasin meets the definition of a "protected water", which is defined by the SWRCB as "water with less than 10,000 milligrams per liter (mg/L) of total dissolved solids (TDS) and is outside of an exempt aquifer per the Code of Federal Regulations, Title 40, Part 146.4 (Kleinfelder 2016). As previously discussed, descriptions of the sediments beneath the Inglewood Oil Field indicate they are non-water-bearing (or "no flow") and discontinuous zones not hydraulically connected to adjacent regional aquifers. However, it is likely that groundwater beneath the Inglewood Oil Field is hydraulically connected to adjacent aquifers since known groundwater occurrences have not historically daylighted at ground surface, indicating that, despite long-term recharge, these saturated zones are able to drain to deeper and/or laterally connected aquifers (Kleinfelder 2016).

It does appear, based on recorded hydraulic behavior (i.e., extraction testing), that the shallow aquifer system beneath the Inglewood Oil Field is not productive and lateral movement of subsurface water may be slow and of small volume; therefore, this suggests that the groundwater volume is insufficient for water supply and that communication with water supply aquifer(s) would be limited. In summary, although groundwater beneath the Project Site appears to occur in a

poorly conductive aquifer system, it is likely in hydraulic connection with adjacent groundwater basins (Kleinfelder 2016).

Table 4.7-4 in Section 4.7, Hazards, Hazardous Materials, Risk of Upset, in this Draft EIR lists the typical fluids used in hydraulic fracturing. Of the chemicals reported for well stimulation treatments in California for which toxicity information is available (i.e., compiled from the voluntary industry database, FracFocus), most are considered to be of low toxicity or non-toxic. However, a few reported chemicals present concerns for acute toxicity. These include biocides (e.g., tetrakis [hydroxymethyl] phosphonium sulfate; 2,2-dibromo-3-nitrilopropionamide; and glutaraldehyde), corrosion inhibitors (e.g., propargyl alcohol), and mineral acids (e.g., hydrofluoric acid and hydrochloric acid). Potential risks posed by chronic exposure to most chemicals used in well stimulation treatments are unknown at this time. The chemicals used for hydraulic fracturing as compiled from disclosures in FracFocus are not required to be either complete or accurate (CCST 2016). Well stimulation fluids or formation fluids, including gas, could migrate to protected groundwater through non-existent or ineffective annular well seals. Therefore, activities at the City IOF have the potential to impact groundwater quality.

In California, injection wells are permitted, regulated, and monitored by the DOGGR under the UIC program requirements. Injection wells are used to replenish the producing zones, increase oil recovery and to safely dispose of the salt water (brine) produced with oil and natural gas (DOGGR 2017). The Injection Permit application must include a detailed engineering study that includes the reservoir and fluid characteristics of each injection zone and the planned well drilling and plugging and abandonment program, including a flood-pattern map showing all injection, production, and plugged and abandoned wells, and unit boundaries. The engineering study must also include casing diagrams for all idle, plugged and abandoned, and deeper-zone producing wells within the area affected by the Project. Along with the engineering study, a geologic study and injection plan must also be submitted that includes a structural and isopach map, a cross section, and a representative electric log that identifies all geologic units, formations, freshwater aquifers, and oil or gas zones. The injection plan must include a map showing all injection facilities; maximum anticipated injection pressure and volumes; monitoring system or method used to ensure that injection fluid is confined to the intended zone or zones of injection; method of injection; corrosion protective measures; the source, analysis, and treatment of the injection fluid; and the location and depth of water-source wells to be used in conjunction with the project (DOGGR 2017).

Additionally, as previously discussed, the DOGGR determined that several of the mitigation measures developed in the SB4 EIR will be converted into formal regulations. The DOGGR's SB4 GW-4b (interim MM HYD-7), requires that the Oil Field Operator demonstrate to the DOGGR's satisfaction that a well used for well stimulation treatments contains an annular 500-foot cement seal extending across the base of protected groundwater and that the integrity of the seal will prevent unintended migration of fluid. This applies to all new wells that will be subjected to well stimulation. For new shallow wells drilled in areas where protected groundwater is present, this requirement is amended to require cementing the entire casing string from the bottom of the well to the surface. The DOGGR will determine the proper casing and cementing depth for the protection of protected groundwater. This mitigation measure will result in a seal across the base of protected groundwater (<10,000 mg/L TDS) for all new wells subject to well stimulation treatment. Requiring a 500-foot seal across the base of protected groundwater would protect groundwater resources in deeper wells.

In compliance with SB4, the Oil Field Operator must certify certain information and actions prior to any well stimulation activity. A well-specific or area-specific groundwater-monitoring plan (GMP) must be developed that outlines methodologies for groundwater sampling, testing, and

monitoring related to well stimulation treatment. The Oil Field Operator must submit completed the DOGGR notices, which include the well's operator and location; the method of well stimulation; duration, depth and other details of the treatment; and the operator's self-certification that it has complied with SB4, including notification of neighbors, identification of other nearby wells, and completion of the GMP. Additionally, the Oil Field Operator must submit specified information regarding the composition and disposition of well stimulation fluids, including, but not limited to, hydraulic fracturing fluids, well stimulation fluids, and flowback fluids, to a Chemical Disclosure Registry that is accessible to the public within 60 days following the cessation of a well stimulation treatment.

In order to further reduce the potential for groundwater contamination through well stimulation, including hydraulic fracturing, several MMs have been incorporated into this Draft EIR that reflect the intent of the DOGGR measures set forth in SB4 EIR.

MM HYD-3 (see SB4 GW-4a) requires that the Oil Field Operator monitor certain DOGGR-selected wells within the Axial Dimensional Stimulation Area (ADSA) during a well stimulation treatment to demonstrate that the wells are not serving as a conduit for upward migration of formation fluids or gas, either through the annular space, well bore, or the well casing, into the protected groundwater zone.

MM HYD-4 (see SB4 GW-4c) requires that the Oil Field Operator install a methane sensor to monitor potential leaks or venting of methane gas. In order to provide additional monitoring for potential migration up ineffective well seals, wells must be equipped with a device approved by the DOGGR to allow for continuous monitoring at the wellhead for methane migration up the well annular space. As part of the permit application, the applicant shall propose a monitoring program for City and DOGGR approval that provides details on sensor manufacturer, installation, calibration, settings/units, and measurements. Gas detectors must be operated (1) before the test to determine variability in baseline readings; (2) for the complete duration of the test; and (3) for a specified time period after the test has been completed, as specified by the DOGGR.

MM HYD-5 (see SB4 GW-5a) requires that the Oil Field Operator demonstrate to the City's and the DOGGR's satisfaction that a record review has been conducted and, if warranted, require a surface geophysical survey or use other suitable field methods to locate any improperly abandoned wells within the ADSA of the well to be stimulated. If records exist with sufficient data to determine the condition of the well, the City and the DOGGR will require, as a condition of the stimulation permit, that the Oil Field Operator ensure that the well has hydrologic and geologic isolation.

MM HYD-6 (see SB4 GW-7a), after consultation with the Los Angeles RWQCB, requires that the Oil Field Operator provide for a tracer or some other reasonable method to allow well stimulation fluids to be distinguished from other fluids or chemicals. This could consist of an added tracer using an inert constituent that could be used to identify the presence of well stimulation fluids. Alternatively, it could be an intrinsic tracer, or some naturally occurring component that makes the well stimulation fluids chemically unique.

Compliance with the DOGGR and Drilling Regulations, and implementation of MM HYD-2 through MM HYD-7, would ensure that impacts on groundwater quality from migration of well stimulation fluids or formation fluids including gas to protected groundwater through non-existent or ineffective annular well seals would be reduced to a less than significant level.

**Threshold 8-9: Would the project cause migration of well stimulation fluids or formation fluids including gas to protected groundwater through damaged or improperly abandoned wells?**

Currently, there are 28 abandoned wells located on the Project Site. By the DOGGR definition, a well will not be considered “abandoned” until after it has been demonstrated that all steps have been taken to protect underground or surface water suitable for irrigation or other domestic uses from the infiltration or addition of any detrimental substance, and to prevent the escape of all fluids to the surface. However, improper or failed well seals on abandoned/plugged wells could result in a release of hydrocarbons, naturally-occurring radioactive material (NORM), and well chemicals to groundwater. This potentially impact to protected groundwater would be significant.

As discussed in the regulatory setting above (Onshore Well Regulations, the UIC Program and SB 4), there are several rules and regulations that an owner/operator must follow concerning abandonment of wells. SB4 regulations require the identification of abandoned wells near the well stimulation site. Drilling Regulations Section 49 requires that abandoned wells be tested quarterly to check for hydrocarbon vapor or liquid leaks.

Also as previously discussed, MM HYD-5 (see SB4 GW-5a) requires that the Oil Field Operator demonstrate to the City’s and the DOGGR’s satisfaction that a record review has been conducted and, if warranted, require a surface geophysical survey or use other suitable field methods to locate any improperly abandoned wells within the ADSA of the well to be stimulated. If records exist with sufficient data to determine the condition of the well, the City and the DOGGR will require, as a condition of the stimulation permit, that the Oil Field Operator ensure that the well has hydrologic and geologic isolation.

Compliance with the DOGGR and Drilling Regulations for well abandonment, as well as implementation of MM HYD-2 and MM HYD-5, would reduce potential impacts on groundwater quality from migration of well stimulation fluids or formation fluids including gas to protected groundwater through damaged or improperly abandoned wells to less than significant. While groundwater monitoring will not prevent impacts to groundwater quality from migration of well stimulation fluids or formation fluids including gas to protected groundwater, data from groundwater monitoring is expected to provide information on the nature and extent of potential contamination as well as provide a potential early warning of a release. This would improve remedial response actions.

**Threshold 8-10: Would the project cause improper disposal of flowback in injection wells that could potentially impact groundwater quality?**

In California, the DOGGR regulates oil and gas wells that inject fluids (Class II injection wells) through its UIC Program. The program is monitored and audited by the USEPA under the Safe Drinking Water Act. The UIC Program includes permitting, inspection, enforcement, mechanical integrity testing, plugging and abandonment oversight, data management, and public outreach (DOGGR 2017). Disposal of oil field produced water into deep injection wells is overseen by the DOGGR. As of March 2015, no contamination of water used for drinking or agricultural purposes related to underground injection by the oil and gas industry had been detected in water supply wells tested by the SWRCB (DOC 2015b).

However, even with the UIC Program, flowback in injection wells could potentially impact groundwater quality. However, compliance with the DOGGR and Drilling Regulations, and implementation of MM HYD-2 through MM HYD-6, would ensure that impacts on groundwater

quality from improper disposal of flowback in injection wells would be reduced to less than significant. While groundwater monitoring will not prevent impacts to groundwater quality from improper disposal of flowback in injection wells, data from groundwater monitoring is expected to provide information on the nature and extent of potential contamination as well as provide a potential early warning of a release. This would improve remedial response actions.

**Threshold 8-11: Would the project cause an inability to identify specific impacts to groundwater quality from well stimulation activities?**

While there are several active, idle and plugged/abandoned wells currently located on the Project Site, there are no active groundwater monitoring wells at the Project Site. Without groundwater monitoring wells located on or adjacent to the Project Site, an inability to identify specific impacts to groundwater quality from well stimulation activities would occur. This is a potentially significant impact to groundwater quality.

Compliance with the DOGGR and Drilling Regulations, and implementation of MM HYD-2 through MM HYD-6, would ensure that impacts on groundwater quality from an inability to identify impacts in a timely manner would be reduced to a level less than significant. While groundwater monitoring will not prevent impacts to groundwater quality from well stimulation activities, data from groundwater monitoring is expected to provide information on the nature and extent of potential contamination as well as provide a potential early warning of a release. This would improve remedial response actions.

#### **4.8.7 CUMULATIVE IMPACTS**

This analysis is based on the cumulative projects discussed in Section 2.7, Cumulative Projects of this Draft EIR, and shown in Exhibit 2-5, Locations of Cumulative Projects.

##### **Cumulative Storm Drainage Capacity Impacts**

Natural drainage patterns directing sheet flow toward drainages would be modified by this grading, and future County IOF development would reduce pervious surfaces (the ground surface area capable of absorbing rainfall) beyond what is anticipated in the City IOF, thereby increasing storm water runoff throughout the Inglewood Oil Field. The conversion of existing sandy soils and vegetation to impervious surfaces would alter the existing drainage pattern within the active surface field boundary from general sheet flow to concentrated flows directed from individual well pads and related infrastructure building pads. This increased and concentrated flow would increase the rate and amount of storm surface runoff that would flow into the retention basins. However, a requirement from the Baldwin Hills CSD program, which is currently in effect, requires that the retention basins, including the Dabney Lloyd Basin (Basin 002 on the Project Site) have the capacity to handle a 100-year storm event without flooding. Similarly, the Drilling Regulations require retention of the 100-year storm event for the Dabney Basin. Runoff throughout the County IOF would be retained in the six surface water retention ponds are located along primary drainages to retain surface runoff from the Inglewood Oil Field.

The majority of the Ballona Creek Watershed is developed except for local parks and the Inglewood Oil Field. Surface flows are monitored and controlled at the Inglewood Oil Field, and surface flows within the larger Ballona Creek Watershed are not expected to substantively increase based on the developed nature of the watershed. Should any additional land development in the watershed occur, including those projects listed in Table 2-6, Cumulative Projects in Section 2.0, Environmental Setting, these development would need to comply with local regulations related to low impact development (LID) and SUSMP requirements, as well as



any other storm drainage requirements intended to manage storm water runoff quantity and quality. Therefore, potential cumulative impacts from storm water runoff water to storm drainage facilities would be less than significant.

### **Cumulative Surface Water Impacts**

As discussed above, by following the Drilling Regulations and MM HYD-1 through HYD-8, the Project's surface water quality impacts would be less than significant. As described above, the Settlement Agreement places limits on the future oil field development at the County IOF.

With County IOF compliance with the Baldwin Hills CSD program, the cumulative condition for the County IOF would not contribute concentrations of pollutants of concern that would cause or contribute to a violation of the water quality standards to surface receiving waters. Therefore, the Project's incremental contribution to cumulative surface water quality impacts would be less than significant. Additionally, all wells throughout the Inglewood Oil Field would be subject to the DOGGR requirements related to well stimulation techniques.

As discussed for the analysis of storm drainage capacity, should any additional land development in the watershed occur, including those projects listed in Table 2-6, Cumulative Projects in Section 2.0, Environmental Setting, these developments would need to comply with local regulations related to LID and SUSMP requirements, as well as any other storm drainage requirements intended to manage storm water runoff quantity and quality. Therefore, potential cumulative impacts from storm water runoff water to surface water quality would be less than significant.

### **Cumulative Groundwater Impacts**

As discussed above, the anticipated quality of storm water runoff discharges from the Project's developed areas would not contribute loads or concentrations of pollutants of concern that would cause or contribute to a violation of applicable groundwater quality standards with implementation of the Drilling Regulations and MM HYD-2 through MM HYD-8.

Any future oil and gas development projects occurring within the Inglewood Oil Field must comply with the DOGGR requirements for the UIC Program, with SB4, and with the Baldwin Hills CSD program. With County IOF compliance with the Baldwin Hills CSD EIR program, as well as City IOF and County IOF compliance with the DOGGR requirements for the UIC Program, the cumulative condition for the County IOF would not contribute to groundwater quality impacts. Therefore, the Project's incremental contribution to cumulative groundwater quality impacts would be less than significant. Additionally, all wells throughout the Inglewood Oil Field would be subject to the DOGGR requirements related to well stimulation techniques.

As discussed for the analysis of storm drainage capacity, should any additional land development in the watershed occur, including those projects listed in Table 2-6, Cumulative Projects in Section 2.0, Environmental Setting, these development would need to comply with local regulations related to LID and SUSMP requirements, as well as any other storm drainage requirements intended to manage storm water runoff quantity and quality. Therefore, potential cumulative impacts from storm water runoff water to groundwater quality would be less than significant.

### **Cumulative Hydrology Impacts**

As discussed above, by following the Drilling Regulations and MM HYD-1 through HYD-8, the Project's hydrology impacts would be less than significant. With County IOF compliance with the Baldwin Hills CSD EIR program, as well as City IOF and County IOF compliance with the DOGGR

requirements for the UIC Program, the cumulative condition for the County IOF would not contribute to hydrology impacts. Therefore, the Project's incremental contribution to cumulative hydrology impacts would be less than significant. Additionally, all wells throughout the Inglewood Oil Field would be subject to the DOGGR requirements related to well stimulation techniques.

As discussed for the analysis of storm drainage capacity, should any additional land development in the watershed occur, including those projects listed in Table 2-6, Cumulative Projects in Section 2.0, Environmental Setting, these development would need to comply with local regulations related to low impact development and SUSMP requirements, as well as any other storm drainage requirements intended to manage storm water runoff quantity and quality. Therefore, potential cumulative impacts from storm water runoff water related to hydrology would be less than significant.

#### **4.8.8 MITIGATION MEASURES**

**MM HYD-1** The Oil Field Operator shall conduct all well drilling activities through a closed-loop drilling and containment system of temporary or permanent tanks in order to avoid potential spillage of drilling muds and fluids.

**MM HYD-2** The Groundwater Monitoring Plan that must be prepared by the Oil Field Operator in order to comply with the DOGGR and the RWQCB requirements shall be augmented to include the following requirements:

- The Oil Field Operator shall prepare a Project-specific Groundwater Monitoring Program to supplement the program conducted as part of the Groundwater Monitoring Program CSD Section E.19. The Project-specific Groundwater Monitoring Program shall be operational prior to commencement of any new well drilling or well stimulation activities to establish baseline conditions.
- A licensed groundwater and surface hydrologist shall prepare and certify the Project-specific Groundwater Monitoring Program.
- Existing groundwater monitoring well MW-9 within the City IOF, which is not currently in the CSD monitoring program, shall be evaluated and rehabilitated, if necessary, to include in the Project-specific Groundwater Monitoring Program. If feasible, also incorporate MW-13 that is located within the County IOF into the Project-specific Groundwater Monitoring Program.
- A deep groundwater well within the City IOF shall be installed and included within the Project-specific Groundwater Monitoring Program. This new well, and well MW-13 (if feasible) shall establish baseline deep groundwater conditions beneath the City IOF.
- Additional shallow and deep groundwater monitoring wells (within the fresh zone) shall be installed, based on the recommendations of the licensed groundwater and surface hydrologist, adjacent to the vertical portions of horizontal wells to establish baseline groundwater conditions.
- Prior to well stimulation activities, shallow and deep groundwater monitoring wells shall be installed above the proposed horizontal stimulation transect and collect groundwater samples to establish baseline groundwater conditions.

- The Annual Drilling Plan shall be reviewed for planned well stimulation and directional drilling activities, so appropriate modifications can be made to the Project-specific Groundwater Monitoring Program for resultant well stimulation techniques.
- Continuous logging of new boreholes for groundwater wells is required to provide better subsurface understanding needed to evaluate saturated conditions or perched intervals.
- Monitor groundwater wells on a regular (e.g., quarterly) basis to identify potential impacts to groundwater that may occur due to deep well injection and/or well stimulation activities. If contamination is detected, the Oil Field Operator shall notify the City, the County of Los Angeles, and the RWQCB, as well as other appropriate local, state, and regional agencies, depending on the nature of the contamination.

**MM HYD-3** (see **SB4 GW-4a**) Prior to the commencement of any well stimulation activities, the Oil Field Operator shall monitor certain DOGGR-selected wells within the Axial Dimensional Stimulation Area (ADSA) during a well stimulation treatment to demonstrate that the wells are not serving as a conduit for upward migration of formation fluids or gas, either through the annular space, well bore, or the well casing, into the protected groundwater zone. As part of the well stimulation permit application process, the DOGGR shall select which wells within the ADSA are required for monitoring, but at a minimum, these wells will include (1) wells that have been stimulated previously; (2) idle wells; and (3) other accessible wells if deemed necessary by the DOGGR. Plugged and abandoned wells are often inaccessible due to being sealed below grade.

**MM HYD-4** (see **SB4 GW-4c**) Prior to the commencement of any well stimulation activities, the Oil Field Operator shall install a methane sensor to monitor potential leaks or venting of methane gas. In order to provide additional monitoring for potential migration up ineffective well seals, wells shall be equipped with a device approved by the DOGGR to allow for continuous monitoring at the wellhead for methane migration up the well annular space. As part of the permit application, the applicant shall propose a monitoring program for the City and the DOGGR approval that provides details on sensor manufacturer, installation, calibration, settings/units, and measurements. Gas detectors shall be operated (1) before the test to determine variability in baseline readings; (2) for the complete duration of the test; and (3) for a specified time period after the test has been completed, as specified by the DOGGR.

**MM HYD-5** (see **SB4 GW-5a**) Prior to the commencement of any well stimulation activities, the Oil Field Operator shall demonstrate to the City's and the DOGGR's satisfaction that a record review has been conducted and, if warranted, require a surface geophysical survey or use other suitable field methods to locate any improperly abandoned wells within the ADSA of the well to be stimulated. If records exist with sufficient data to determine the condition of the well, the City and the DOGGR will require, as a condition of the stimulation permit, that the operator ensure that the well has hydrologic and geologic isolation. If conduit wells are located, the applicant shall mitigate the potential pathway in a manner approved by the City and the DOGGR. Site-specific mitigation measures shall be considered, including modifying the design of the well stimulation treatment or moving the location of a proposed treatment to another well. If pathways cannot be mitigated,

the DOGGR shall require modifications to the stimulation design or not approve the permit.

**MM HYD-6** (see **SB4 GW-7a**) After consultation with the Los Angeles Regional Water Quality Board, and prior to the commencement of any well stimulation activities, the Oil Field Operator shall provide for a tracer or some other reasonable method to allow well stimulation fluids to be distinguished from other fluids or chemicals. This could consist of an added tracer using an inert constituent that could be used to identify the presence of well stimulation fluids. Alternatively, it could be an intrinsic tracer, or some naturally occurring component that makes the well stimulation fluids chemically unique. Potential geochemical changes in the subsurface during injection or migration shall be considered. Use of a tracer shall be required to be disclosed to the public consistent with the permanent SB 4 regulations. The regulations specifically require that the applicant require the composition and disposition of all well stimulation treatment fluids other than water, including “any radiological components or tracers injected into the well as part of the well stimulation treatment, a description of the recovery method, if any, for those components or tracers, the recovery rate, and specific disposal information for the recovered components or tracers a radiological component or tracer injected”.

**MM HYD-7** The following measure is an interim MM to be implemented and enforced by the City until such time as DOGGR adopts the equivalent measure listed as a Regulatory Requirement in this Draft EIR (SB4 GW-4b Install a Well Seal across Protected Groundwater for New Wells Subject to Well Stimulation Treatments). This MM shall become inapplicable when DOGGR enacts this measure as a formal regulation; the regulation shall then become applicable as part of approving a well stimulation treatment permit.

The City and DOGGR shall require as a condition of permit approval that the Oil Field Operator demonstrate to DOGGR's satisfaction that a well used for well stimulation treatments contains an annular 500-foot cement seal extending across the base of protected groundwater and that the integrity of the seal will prevent unintended migration of fluid. This applies to all new wells that will be subjected to well stimulation. For new shallow wells drilled in areas where protected groundwater is present, this requirement is amended to require cementing the entire casing string from the bottom of the well to the surface. DOGGR will determine the proper casing and cementing depth for the protection of protected groundwater. In no event will this requirement conflict with existing DOGGR regulations requiring casing depth limits for the adequate anchorage of blow-out prevention equipment and safe drilling operations.

DOGGR must approve the method for determining the base of protected groundwater, but will consider best management practices using available data on produced water quality and/or industry-accepted interpretation methods of geophysical (electric) logs.

Current well construction requirements found in DOGGR's regulations (see CCR Title 14, Sections 1722.2 through 1722.6) require cement placement in surface casing from the base of the casing to the surface and preferably through the freshwater zone (3,000 mg/L total dissolved solids [TDS]). Furthermore, DOGGR regulations require the use of a second string of casing if the surface casing does not extend through the base of freshwater (3,000 mg/L TDS). However, the depth

of subsequent casing strings might not extend through the zone of protected groundwater. This mitigation measure (SB4 GW-4b) will result in a seal across the base of protected groundwater (<10,000 mg/L TDS) for all new wells subject to well stimulation treatment. Requiring a 500-foot seal across the base of protected groundwater would protect groundwater resources in deeper wells. Prior to approving an Annual Drilling Plan, the Oil Field Operator shall provide evidence to the City that the actions prescribed in this measure have been completed, including but not limited to an approved well stimulation permit from DOGGR for the well(s) addressed in the proposed Annual Drilling Plan.

**MM HYD-8** The following measure is an interim MM to be implemented and enforced by the City until such time as DOGGR adopts the equivalent measure listed as a Regulatory Requirement in this Draft EIR (SB4 SWR-1b Surface Water Protection). This MM shall become inapplicable when DOGGR enacts this measure as a formal regulation; the regulation shall then become applicable as part of approving a well stimulation treatment permit.

The Oil Field Operator for a well stimulation treatment permit shall submit to the City and DOGGR maps, photographs, and other information, prepared by a qualified hydrologist acceptable to the City and DOGGR, that describe or show any perennial, intermittent or ephemeral streams or other water bodies within 300 feet of the proposed well stimulation treatment and of any surface disturbance associated with the proposed stimulation treatment. Information provided shall include, as a minimum: (a) water body name, if applicable; (b) characteristics (stream, pond, lake, wetland); (c) whether the water body is perennial, intermittent or ephemeral; (d) normal summer and winter flow rate, if available, or estimated; (e) habitat characteristics (required in SB4 MM BIOT-1a); (f) distance and ground slope between the well pad and water body; (g) contributing watershed area; and (h) expected drainage patterns at the location of the proposed well stimulation treatment. DOGGR shall consider this information in determining whether to approve the proposed well stimulation treatment permit, and shall require that protection and minimization of potential impacts to identified surface water be addressed in the site layout design, Storm Water Pollution Prevention Plan, worker training, spill contingency and response plans, and site restoration plans.

DOGGR shall not approve applications for well stimulation where the well pad will be less than 100 feet from a perennial water body, or an intermittent or ephemeral water body, if DOGGR determines, based on the qualified hydrologist's evaluation, that open surface water or flow is normally present at that location and season at the scheduled time for well stimulation. Normally present means day-to-day perennial or seasonal base flow or presence of surface water.

Exceptions to the 100-foot setback from surface waters may be granted at DOGGR's discretion if the Oil Field Operator can demonstrate to DOGGR's satisfaction that a setback of 100 feet from these surface water resources cannot feasibly be achieved and/or is unnecessary to avoid significant effects on potentially affected water bodies (e.g., because construction of a temporary or permanent berm is an adequate substitute for a setback or that existing structures at the well site will operate as a de facto berm). The Oil Field Operator shall submit a written justification for a proposed narrower setback, along with any proposed substitute mitigation intended to avoid significant effects on surface water resources. The justification shall explain why the proposed narrower setback is as

wide as is feasible and/or is unnecessary under the circumstances. DOGGR shall not issue a well stimulation treatment permit for a proposal with a setback of less than 100 feet unless DOGGR independently determines, based on substantial evidence, that a 100-foot setback is infeasible or unnecessary, and that the proposed well stimulation, with or without any relevant mitigation measure(s) or condition(s) of approval, will not cause a significant effect to the potentially affected water bodies. In making its own determination regarding whether a 100-foot setback or a relevant potential lesser setback is infeasible, DOGGR shall consider, at a minimum, information relating to the contributing watershed area, local climate, past disturbance in the affected area, existing protections and controls, ground slope, relevant economic, legal, social, and technological factors, any Los Angeles RWQCB recommendations, habitat conditions, or any other information deemed appropriate by the Oil Field Operator and accepted as such by DOGGR, consistent with the concept of “feasibility” as it occurs in CEQA, the State CEQA Guidelines, and CEQA case law.

In assessing the feasibility of, and need for, a 100-foot setback, DOGGR may, at its discretion, consider groups of permit applications, even for an area as large as an entire established oil or gas field. In doing so, DOGGR may consider maps, photographs, and other relevant information supplied by the Oil Field Operator(s) or DOGGR. Such a comprehensive evaluation, if approved by DOGGR and at DOGGR’s discretion, may result in compliance with this mitigation measure for more than one proposed permit, provided that practical assurance is given that all individual permits within any larger group of permits will comply with the requirements of this measure.

After the issuance of a well stimulation treatment permit and within 60 days after the cessation of a well stimulation treatment, the operator shall submit to the City and DOGGR a map and other information depicting or describing surface water resources and the actual surface disturbance areas to document the actual setback or the extent of disturbance, if any, in surface waters. Where the surface disturbance has encroached into the minimum setback required by the condition(s) of approval, DOGGR shall determine whether the extent and effect of the disturbance are sufficient to require the Oil Field Operator to undertake some sort of environmental restitution or remediation that could achieve indirectly the practical equivalent of the level of surface water protection that the setback area in the permit condition(s) was intended to achieve. In deciding what kind of restitution or remediation, if any, is appropriate, DOGGR may consult with the SWRCB, the Los Angeles RWQCB, or the California Department of Fish and Wildlife. Prior to approving an Annual Drilling Plan, the Oil Field Operator shall provide evidence to the City that the actions prescribed in this measure have been completed, including but not limited to an approved well stimulation permit from DOGGR for the well(s) addressed in the proposed Annual Drilling Plan.

#### **4.8.9 LEVEL OF SIGNIFICANCE**

With the implementation of MM HYD-1 through MM HYD-8, direct impacts and cumulative impacts associated with hydrology and water quality would be less than significant. Table 4.8-4 below summarizes the significance finding of each threshold addressed in this section before and after mitigation, where applicable.



**TABLE 4.8-4  
SIGNIFICANCE SUMMARY**

Threshold		Project Level of Significance	Mitigation Measure(s)	Level of Significance after Mitigation
<b>8-1</b>	Violate any water quality standards or waste discharge requirements.	Potentially Significant	MM HYD-1	Less than Significant With Mitigation
<b>8-2</b>	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).	Less than Significant	N/A	Less than Significant
<b>8-3</b>	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite.	Less than Significant	N/A	Less than Significant
<b>8-4</b>	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite.	Less than Significant	N/A	Less than Significant
<b>8-5</b>	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of pollutant runoff.	Less than Significant	N/A	Less than Significant
<b>8-6</b>	Otherwise substantially degrade water quality.	Potentially Significant	MM HYD-2, MM HYD-8	Less than Significant With Mitigation
<b>8-7</b>	Adversely impact groundwater quality through surface or subsurface spills or leaks during well stimulation.	Potentially Significant	MM HYD-2, MM HYD-8	Less than Significant With Mitigation
<b>8-8</b>	Cause migration of well stimulation fluids or formation fluids including gas to protected groundwater through non-existent or ineffective annular well seals.	Potentially Significant	MM HYD-2 through MM HYD-7	Less than Significant With Mitigation
<b>8-9</b>	Cause migration of well stimulation fluids or formation fluids including gas to protected groundwater through damaged or improperly abandoned wells.	Potentially Significant	MM HYD-2, MM HYD-5	Less than Significant With Mitigation
<b>8-10</b>	Cause improper disposal of flowback in injection wells that could potentially impact groundwater quality.	Potentially Significant	MM HYD-2 through MM HYD-6	Less than Significant With Mitigation
<b>8-11</b>	Cause an inability to identify specific impacts to groundwater quality from well stimulation activities.	Potentially Significant	MM HYD-2 through MM HYD-6	Less than Significant With Mitigation
N/A: not applicable				

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