

## 3.9 Hydrology and Water Quality

This section describes and evaluates potential impacts related to hydrology and water quality that could result from construction and operation of the Proposed Project. The section contains: (1) a description of the existing hydrology and water quality conditions of the Project Site and the surrounding areas, as well as a description of the Adjusted Baseline Environmental Setting; (2) a description of the regulatory federal, State, and local regulations related to hydrology and water quality; and (3) an analysis of the changes in hydrology and water quality associated with the implementation of the Proposed Project, as well as the identification of potentially feasible measures that could mitigate significant impacts. Comments received in response to the NOP for the EIR can be found in Appendix B; however, no specific comments regarding hydrology and water quality were provided.

The analysis included in this section was developed based on information contained in the City of Inglewood General Plan, City of Inglewood Urban Water Management Plan, Golden State Water Company (GSWC) Urban Water Management Plan, Federal Emergency Management Agency (FEMA) Digital Flood Insurance Rate Maps (FIRMs), Groundwater Basins Master Plan, Enhanced Watershed Management Program for the Dominguez Channel Watershed, Los Angeles Regional Water Quality Control Board (RWQCB) Plan, the project-specific Water Supply Assessment (Appendix M), the *Inglewood Basketball and Entertainment Center Low Impact Development (LID) Report* (LID Report) (Appendix Q), and the *Inglewood Basketball and Entertainment Center Preliminary Hydrology Report* (Preliminary Hydrology Report) (Appendix Q). The LID Report outlines the proposed LID strategies and best management practices (BMPs) that would be implemented to comply with the stormwater requirements for the Proposed Project. The Preliminary Hydrology Report outlines the on-site hydrology and existing storm drain infrastructure that serves the Project Site as well as on-site hydrology (e.g., proposed drainage features, quantified stormwater flows, and new drainage infrastructure necessary to accommodate flows) of the Proposed Project.

### 3.9.1 Environmental Setting

#### Surface Water

The City of Inglewood is located in the Dominguez Channel Watershed, within the Upper Dominguez Channel drainage area. The Project Site is located approximately one-mile north of the start of the man-made Dominguez Channel, which begins at the City of Hawthorne and City of Inglewood boundary and discharges into the Los Angeles and Long Beach Harbors.<sup>1</sup>

The Dominguez Channel Watershed encompasses approximately 133 square miles of land and water in the southern portion of the Los Angeles Basin.<sup>2</sup> Approximately 81 percent of the

<sup>1</sup> City of Los Angeles Stormwater Program. 2018. *Dominguez Channel Watershed*. Available: <http://www.lastormwater.org/about-us/about-watersheds/dominguez-channel/>. Accessed October 2, 2018.

<sup>2</sup> Los Angeles County Department of Public Works. 2018. *Dominguez Watershed*. Available: <https://dpw.lacounty.gov/wmd/watershed/dc/>. Accessed October 2, 2018.

watershed has been developed. Residential development covers nearly 40 percent of the watershed and another 41 percent is made up of industrial, commercial, and transportation uses. Overall, the watershed is approximately 61 percent impervious. While constructed waterways are predominant, some small natural creeks are located in the hills of the Palos Verdes Peninsula. Because the majority of the watershed is urban, drainage is primarily conducted through an extensive network of underground storm drains.

The Dominguez Channel Watershed is designated as Hydrologic Unit 405.12 by the State Water Resources Control Board (SWRCB) and as the San Gabriel Hydrologic Unit by the Los Angeles RWQCB.<sup>3</sup> Water bodies within the hydrologic unit include the Dominguez Channel, Wilmington Drain, Torrance/Carson Channel (“Torrance Lateral”), Machado Lake, Los Angeles and Long Beach Harbors, and Cabrillo Beach.

Approximately 70 square miles of the Dominguez Channel Watershed drains to the 15.7-mile-long Dominguez Channel, which is the largest drainage feature in the Dominguez Channel Watershed. The remaining portion of the Dominguez Channel Watershed drains to retention basins for groundwater recharge; into Wilmington Drain, which empties into Machado Lake; or to the Los Angeles Harbor or Long Beach Harbor independently of the Dominguez Channel.

Flows in the Dominguez Channel Watershed are influenced by the volume of surface runoff, local groundwater, and rainfall. The Los Angeles Basin has a Mediterranean climate with moderate, dry summers and cool winters, consistent with coastal Southern California. Precipitation in the region occurs primarily as rain from November through March, with an average annual rainfall of 12.02 inches.<sup>4</sup> In general, stormwater runoff within the City of Inglewood, including the Project Site, flows into the Los Angeles County Flood Control District storm drain system.

### **Soil Drainage**

The Project Site currently consists of both pervious and impervious surfaces, including a fast-food restaurant, a motel, a light manufacturing/warehouse facility, a commercial catering business, a groundwater well and related facilities, and large portions of vacant land.

The Project Site is currently made up of approximately 15 percent impervious surfaces and 85 percent pervious surfaces. Preliminary investigations of the Project Site indicate that the site’s native soil characteristics have poor drainage with a low infiltration rate.<sup>5,6</sup> According to the Los Angeles County Guidelines for LID Stormwater Infiltration, in order for soil to be pervious enough for stormwater to infiltrate the soil, subsurface materials must allow infiltration at a rate

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<sup>3</sup> State Water Resources Control Board, 2014. *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*. Available: [https://www.waterboards.ca.gov/losangeles/water\\_issues/programs/basin\\_plan/basin\\_plan\\_documentation.html](https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/basin_plan_documentation.html). Accessed October 4, 2018.

<sup>4</sup> City of Inglewood, 2016. *2015 Urban Water Management Plan*. p. 3-4.

<sup>5</sup> AECOM, 2018. *Inglewood Basketball & Entertainment Center Project Low Impact Development (LID) Report*. August 23, 2018. p. 2.

<sup>6</sup> AECOM, 2018. *Preliminary Geotechnical Investigation*. September 14, 2018. p. 34.

equal to or greater than 0.3 inches per hour.<sup>7</sup> Preliminary percolation tests were conducted at five selected locations at the Project Site. Based on the results, infiltration rates for the soils in the upper 10 feet ranged from 0.32 to 3.52 inches per hour. However, the subsurface native soils at the Project Site consist predominately of clayey soils with estimated infiltration rates lower than 0.3 inches per hour and with few or no connectivity to permeable soil horizons. Moreover, there is no evidence that the underlying, predominantly clayey soils at the Project Site have experienced saturation. These characteristics indicate that the Project Site has a low infiltration rate, and provides very little groundwater recharge through percolation of soils.

### **Drainage Infrastructure**

#### **Arena Site**

The Arena Site is the central part of the Project Site that would include the arena, public plaza, community space, practice facility, sports medicine clinic, team offices, retail/restaurants, a parking structure, and related development. The Arena Site currently includes a fast-food restaurant, a motel, a light manufacturing/warehouse facility, a commercial catering business, a ~~city~~ groundwater well and related facilities, and large portions of vacant land.

West 102nd Street crosses through the Arena Site in an east-west direction. Storm drainage facilities serving this portion of the Project Site include a 60-inch-diameter storm drain pipeline within South Prairie Avenue, known as the Los Angeles County Department of Public Works (LACDPW) Storm Drain Line Project 681.<sup>8,9,10</sup> In addition, an existing catch basin is located at the intersection of West 102nd Street and South Prairie Avenue.

#### **West Parking Garage Site**

The West Parking Garage Site is currently vacant, with West 101st Street crossing through the site in an east-west direction. This site would include a multi-level parking structure to serve patrons of the Arena Site.

The West Parking Garage Site is served by a 24-inch-diameter storm drain pipeline (the LACDPW Storm Drain Line Project 4402) that begins in West 101st Street, travels north to West Century Boulevard, turns east along West Century Boulevard, and then turns north and south along South Prairie Avenue, connecting to the abovementioned 60-inch-diameter storm drain pipeline within South Prairie Avenue (LACDPW Storm Drain Line Project 681).

#### **East Transportation and Hotel Site**

This portion of the Project Site is located east of the Arena Site and would include a three-story parking garage along West Century Boulevard, with the first floor serving as a transportation hub. The transportation hub includes a staging area for private or charter buses and a drop-off, staging,

<sup>7</sup> County of Los Angeles Department of Public Works, 2014. *Administrative Manual: Guidelines for Design, Investigation, and Reporting Low Impact Development Stormwater Infiltration*. p. 2.

<sup>8</sup> AECOM, 2018. *Existing Conditions Plan Sheet C-101*. August 29, 2018.

<sup>9</sup> Los Angeles County Department of Public Works, 2019. *Los Angeles County Storm Drain System*. Accessed February 8, 2019.

<sup>10</sup> D&D Engineering Inc., 2019. Preliminary Hydrology Report.

Inglewood and the GSWC. Based on available data, groundwater pumped from the WCGB generally declined from 2011 to 2015 due to strong conservation efforts in response to a state-wide drought as well as operational issues.<sup>20</sup>

**TABLE 3.9-1  
 WCGB HISTORICAL WELL PRODUCTION (AFY)**

Entity	2011 <sup>a</sup>	2012 <sup>a</sup>	2013 <sup>a</sup>	2014 <sup>a</sup>	2015 <sup>a</sup>	2016–17 <sup>b</sup>	2017–18 <sup>b</sup>
City of Inglewood	2,383	2,761	1,843	1,879	1,763	2,483	2,073
GSWC	13,116	12,732	12,738	13,333	5,484	3,172	7,028
<b>Total</b>	<b>15,499</b>	<b>15,493</b>	<b>14,581</b>	<b>15,212</b>	<b>7,247</b>	<b>5,655</b>	<b>9,101</b>

**NOTE:**

The notable decrease in GSWC well production in 2015 and 2016 was due to conservation efforts and operational issues.

**SOURCES:**

<sup>a</sup> City of Inglewood, 2016. *2015 Urban Water Management Plan*. p. 6-11.; Golden State Water Company, 2016. *2015 Urban Water Management Plan, Southwest*. p. 6-10.

<sup>b</sup> Water Replenishment District 2017 and 2018 Watermaster Service Reports. Note the Watermaster reports use an Administrative Year which is July 1 to June 30.

Water Well #8

The City of Inglewood Water Well #6 is located within the Project Site. As part of the Proposed Project, the existing Water Well #6 would be demolished, and a new Water Well #6<sup>8</sup> would be constructed on the Well Relocation Site. The existing Water Well #6 was constructed in 2003 and has been experiencing declining pumping capacity over the years.<sup>21</sup> Table 3.9-2 shows the City's historical well production from Water Well #6. The original recommended flow rate for Well #6 was 2,800 gpm. The well pump was replaced in 2011 with a reduced flow of 1,400 gpm; however, mechanical issues and emergency repairs reduced the average day use to approximately 1,200 gpm (or approximately 1,550 AFY). As shown in Table 3.9-2, in 2017, the most recent year for which data is available, Water Well #6 produced a total of 1,026 AF. Water Well #6 is scheduled for emergency repair and rehabilitation to increase its capacity to 1,500 gpm. The rehabilitation work would seal off holes in the casing and cleaning perforations.

**TABLE 3.9-2  
 WATER WELL #6 HISTORICAL WELL PRODUCTION (AFY)**

Well	2008	2009	2010	2011	2012	2013	2014	2015	2016 <sup>a</sup>	2017 <sup>a</sup>
Water Well #6	2,055	1,810	1,441	1,062	1,835	1,288	1,493	1,330	1,256	1,026

SOURCES: City of Inglewood, 2016. *2015 Urban Water Management Plan*. p. 6-11.

<sup>a</sup> City of Inglewood, 2019. Well Production and Water Consumption Data Years 2016 and 2017.

According to the project-specific *Preliminary Geotechnical Report* (see Appendix H), the historically highest groundwater level in the vicinity of the Project Site was greater than 50 feet

<sup>20</sup> City of Inglewood, 2016. *2015 Urban Water Management Plan*. p. 6-9.

<sup>21</sup> City of Inglewood, 2018. *Proposed Well Number 8 Preliminary Design Report*. July. p. 1.

below existing grade.<sup>22</sup> The existing Water Well #6 is screened at approximately 400 feet below grade.

### **Central Basin**

The Central Basin, or southeastern portion of the Los Angeles Coastal Plain, has a surface area of approximately 270 square miles.<sup>23</sup> The Central Basin is bounded to the north by the Hollywood Basin and the Elysian, Repetto, Merced, and Puente Hills; to the east by the Los Angeles County/Orange County line; and to the south and west by the Newport-Inglewood fault zone and the WCGB.

Similar to the WCGB, water bearing deposits in the Central Basin include the unconsolidated and semi-consolidated marine and alluvial sediments of Holocene, Pleistocene, and Pliocene ages.<sup>24</sup> The Central Basin is divided into four sections, including the Los Angeles Forebay,<sup>25</sup> the Montebello Forebay, the Whittier Area, and the Pressure Area.<sup>26</sup> The two forebays represent areas of unconfined aquifers that allow percolation of surface water down to deeper production aquifers to replenish the rest of the basin. The Whittier Area and Pressure Area are confirmed aquifer systems that receive relatively minimal recharge from surface water, but are replenished from the upgradient forebay areas or other groundwater basins. As detailed above, the Newport-Inglewood Uplift fault is a partial barrier to groundwater flow, causing differences in water levels on opposite sides of the fault system. Groundwater flows between the WCGB and Central Basin are based on the groundwater elevations on either side of the fault. Most of the groundwater in the Central Basin remains at an elevation below sea level due to historic over pumping.

The Central Basin has an estimated storage capacity of approximately 13.8 million AF.<sup>27</sup> The Central Basin was adjudicated by the courts in 1965 due to over pumping and a decline in water levels. The Central Basin adjudication was originally set at 267,900 AFY and adjusted to 217,367 AFY to impose stricter control.<sup>28</sup> The GSWC's adjudicated share of water rights is 16,439 AFY.<sup>29</sup> Similar to the WCGB, WRD is responsible for maintaining water levels in the Central Basin, and determines replenishment requirements.

The City of Inglewood does not own or operate wells within the Central Basin. The GSWC operates two wells that are located within the Central Basin (Bellhaven Number 3 and Bellhaven

<sup>22</sup> AECOM, 2018. *Preliminary Geotechnical Investigation*. September 14, 2018. p. 10.

<sup>23</sup> Water Replenishment District of Southern California, 2016. *Groundwater Basins Master Plan*. Available: [https://www.wrd.org/sites/pr/files/GBMP\\_FinalReport\\_Text%20and%20Appendicies.pdf](https://www.wrd.org/sites/pr/files/GBMP_FinalReport_Text%20and%20Appendicies.pdf). Accessed October 3, 2018. p. 1-3.

<sup>24</sup> Todd Groundwater, 2018. *Water Supply Assessment: Golden State Water Company – Southwest, Inglewood Basketball and Entertainment Center*. September.

<sup>25</sup> A forebay is an artificial pool of water in front of a larger body of water that may be man-made.

<sup>26</sup> Water Replenishment District of Southern California, 2016. *Groundwater Basins Master Plan*. Available: [https://www.wrd.org/sites/pr/files/GBMP\\_FinalReport\\_Text%20and%20Appendicies.pdf](https://www.wrd.org/sites/pr/files/GBMP_FinalReport_Text%20and%20Appendicies.pdf). Accessed October 3, 2018. p. 1-4.

<sup>27</sup> Golden State Water Company, 2016. *2015 Urban Water Management Plan, Southwest*. p. 6-4.

<sup>28</sup> Water Replenishment District of Southern California, 2016. *Groundwater Basins Master Plan*. Available: [https://www.wrd.org/sites/pr/files/GBMP\\_FinalReport\\_Text%20and%20Appendicies.pdf](https://www.wrd.org/sites/pr/files/GBMP_FinalReport_Text%20and%20Appendicies.pdf). Accessed October 3, 2018. p. 1-4.

<sup>29</sup> Golden State Water Company, 2016. *2015 Urban Water Management Plan, Southwest*. p. 7-6.

## Impacts and Mitigation Measures

**Impact 3.9-1: Construction and operation of the Proposed Project could have the potential to violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality, or conflict with or obstruct implementation of a water quality control plan. (Less than Significant with Mitigation)**

### ***Construction***

The use of construction equipment and other vehicles could result in spills of oil, grease, gasoline, brake fluid, antifreeze, or other vehicle-related fluids and pollutants. Improper handling, storage, or disposal of fuels and materials or improper cleaning of machinery could result in accidental spills or discharges that could degrade water quality. In addition, the use of equipment and ground disturbing activities could increase erosion, in turn potentially increasing sediment discharged into storm water that could degrade water quality. As discussed in the Regulatory Setting, above, the Proposed Project would be required to comply with a number of regulations designed to reduce or eliminate construction-related water quality effects, including the NPDES General Construction Permit and the City's Municipal Code section 10-208 (Low Impact Development Requirements).

Before any construction activities commence, an application for coverage under the General Construction Permit would be submitted to the Los Angeles RWQCB. In addition, compliance with Municipal Code section 10-208 requires the project applicant to prepare and submit a LID Report to the City, which would implement LID standards and practices for stormwater pollution mitigation consistent with the County's LID Standards Manual. The LID Report prepared for the Proposed Project demonstrates how the Proposed Project would comply with the MS4 Permit; the report is provided as Appendix Q.

Before construction could begin, a SWPPP would be developed and a Notice of Intent (NOI) filed with the Los Angeles RWQCB. After the Los Angeles RWQCB and the City of Inglewood confirm the applicability of the General Construction Permit, and approve the LID Report and the SWPPP, construction could commence. Construction would, thereafter, be required to implement and maintain the BMPs outlined in the LID Report and SWPPP. BMPs could consist of a wide variety of measures taken to reduce pollutants in stormwater and other non-point source runoff, such as biofiltration and/or stormwater planters. The City would complete inspections to verify that the LID Report and SWPPP are implemented correctly as part of the building permit process.

The City's Municipal Code Section 10-208 also requires BMPs to minimize the potential for and effects from discharge (defined as any spill or release of substances) and pollutants (including metals, fuels, solvents, petroleum substances, and more) during construction activities for all contractors. If a spill were to occur, City's Municipal Code Section 10-208 also requires the contractor to notify the City, and take action to contact the appropriate safety and clean-up crews to ensure that a prevention program is followed. In addition, the City would investigate any spills reported. A written description of reportable releases would be submitted to the Los Angeles RWQCB and the California Department of Toxic Substances Control (DTSC) by the contractor

groundwater levels with the relocated well, the impact of the Proposed Project related to substantial depletion of groundwater supplies would be **less than significant**.

See Section 3.15, Utilities and Service Systems, for a discussion of project-level impacts related to water supply, including the provision of local groundwater to meet demand related to the Proposed Project.

#### Mitigation Measures

None required.

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**Impact 3.9-3: Construction and operation of the Proposed Project could have the potential to substantially alter the existing drainage patterns of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which has the potential to: result in substantial erosion or siltation on or off site; substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flow. (Less than Significant with Mitigation)**

A thorough analysis regarding the potential for substantial erosion or siltation on or off-site is also addressed in Section 3.6, Geology and Soils, under Impact 3.6-1.

#### ***Erosion or Siltation, Runoff Flooding, and Redirection of Flows***

##### **Construction**

There are no natural water or drainage features on the Project Site, and current flow of stormwater runoff is to existing storm drain facilities that ultimately flow to City maintained storm drain mains. The Proposed Project would include ground disturbing activities to construct the proposed improvements. Ground disturbing activities, including excavation and grading, would alter the ground surface, consequently altering drainage patterns. Altered drainage patterns have the potential to result in erosion or siltation, increase runoff volumes that could result in flooding or even redirect or concentrate flood flows.

As detailed above under Impact 3.9-1, construction of the Proposed Project would be required to comply with the NPDES General Construction Permit, the City's Municipal Code Section 10-208, the County's LID Standards Manual, and the USGBC's LEED program. Through these regulations, the project applicant would be required to prepare and implement a LID Report (the LID Report can be found in Appendix Q) and a SWPPP that are approved by the City. These plans would include erosion and sediment control BMPs to minimize the potential for erosion and sedimentation to occur during construction as well as measures to control runoff volumes. BMPs would include, but would not necessarily be limited to, filtering runoff during construction, avoiding heavy grading and earthwork operations during the rainy season, and incorporating landscaping as early as possible. In