

4.8 HYDROLOGY AND WATER QUALITY

This section of the EIR analyzes the potential environmental effects on hydrology and water quality from implementation of the proposed project. Data for this section were taken from the Glendale Emergency Plan, Glendale General Plan Safety Element Technical Background Report, the EPA, and Upper Los Angeles River Watershed Watermaster. Full reference-list entries for all cited materials are provided in Section 4.8.5 (References).

4.8.1 Environmental Setting

■ Surface Water

The proposed SGCP area is within the Los Angeles River watershed, which includes 834 square miles of Los Angeles County. The eastern portion of the watershed spans from the Santa Monica Mountains to the Simi Hills and in the west from the Santa Susana Mountains to the San Gabriel Mountains. The watershed encompasses and is shaped by the Los Angeles River. The river flows adjacent to the western and southern borders of the proposed SGCP area in a concrete lined channel. The upper portion of the watershed (Upper Los Angeles River Watershed), where the proposed SGCP area is located, contains a network of flood control dams and debris basins that flow to the Los Angeles River (LACDPW 2016).

The Upper Los Angeles River watershed is home to approximately 2.3 million people, mostly in high density development in the interior valleys and foothills. Precipitation within the Upper Los Angeles River watershed typically falls in a few major storm events between November and March to an average of 19 inches per year. The proposed SGCP area is located directly south of the Verdugo Wash, and within the Scholl Canyon-Los Angeles River sub-watershed (Figure 4.8-1). The mountains generate substantial runoff, much of which can be recharged into the underlying groundwater basins via favorable soils along natural stream channels and on the valley floors. The major expanses of urban and suburban development on the valley floors, and significant residential development in canyons and associated hillsides, have resulted in the channelization of most of the major river and stream channels and contributed to the degraded surface water quality in those channels (GLAC 2013).

■ Groundwater

The proposed SGCP area currently has two sources of groundwater, the San Fernando Valley Basin and the Verdugo Basin (Figure 4.8-2). These two groundwater basins are discussed below.

San Fernando Valley Basin

The San Fernando Valley Basin consists of 112,000 acres and is bounded to the north by the San Gabriel Mountains and the eroded south end of the little Tujunga Syncline which separates the Sylmar Basin; the Verdugo Mountains, San Gabriel Mountains, and San Rafael Hills bound the east and northeast portion of the basin; the Santa Monica Mountains bound the southern portion of the basin; and the Santa Susana Mountains and Simi Hills bound the west and northwest portion of the basin.

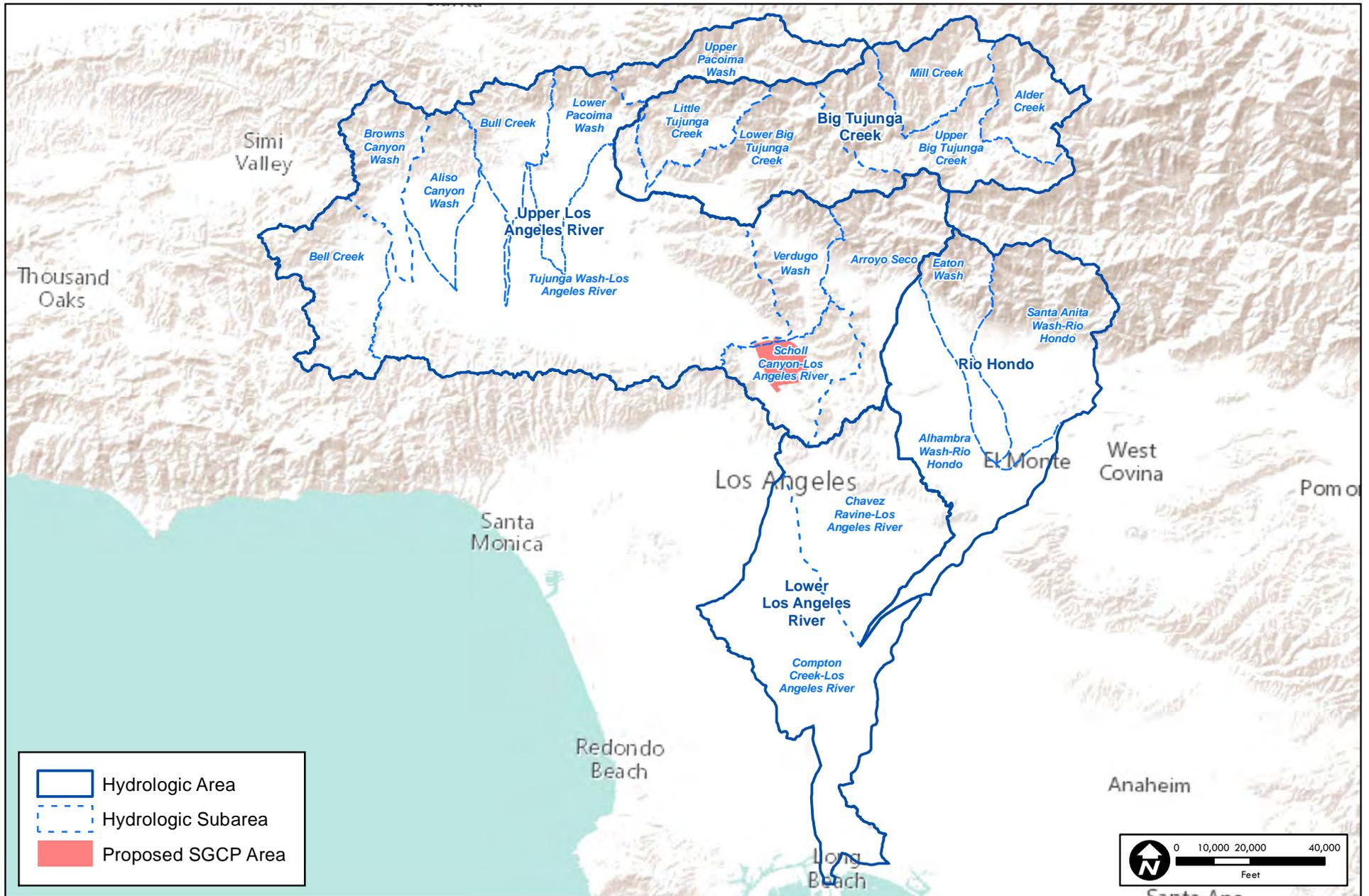


FIGURE 4.8-1
Los Angeles River Watershed



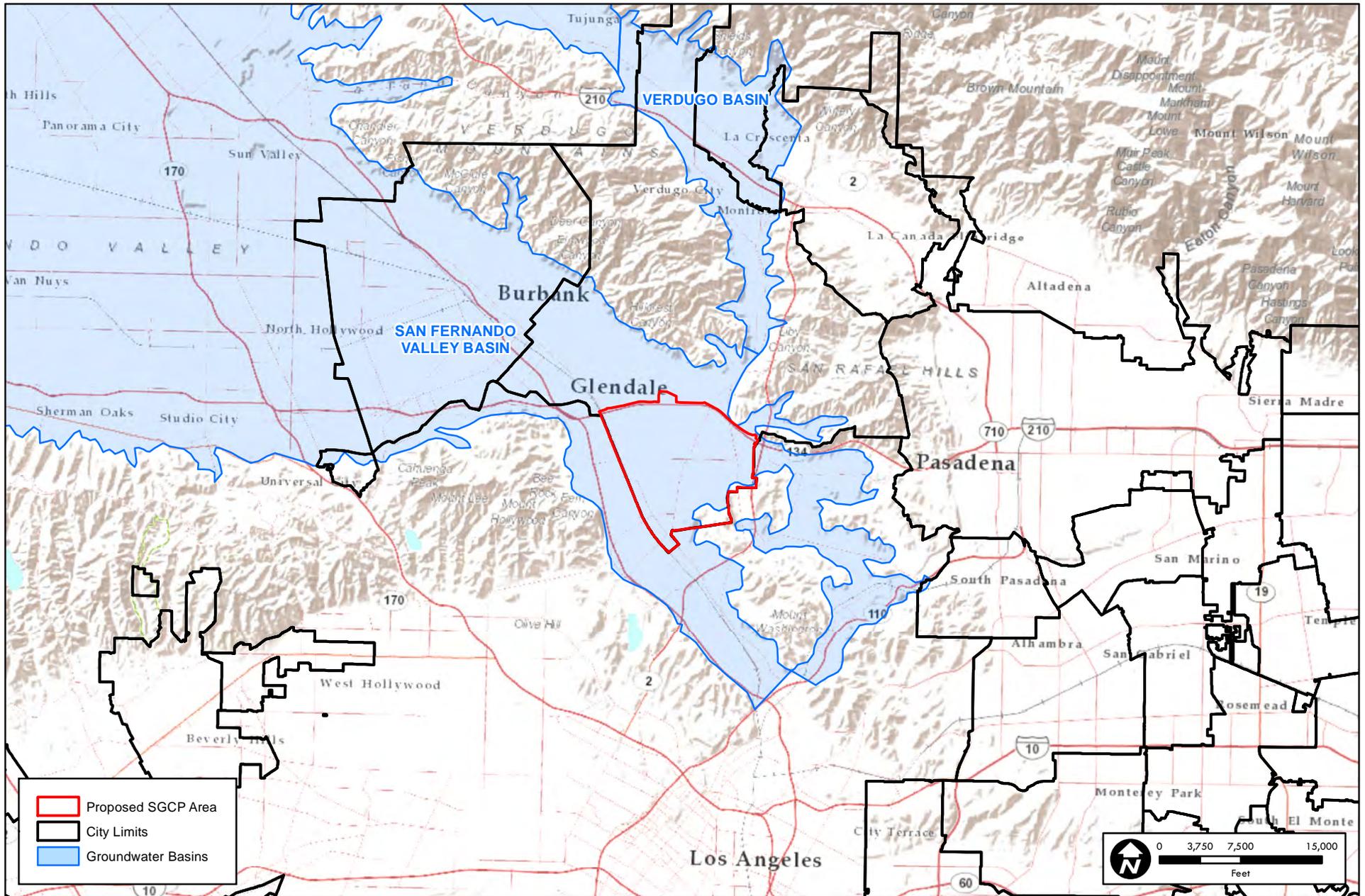


FIGURE 4.8-2
Groundwater Basins



100042606 South Glendale Community Plan PEIR

Sources: Esri 2017, Atkins 2017, Los Angeles County 2017

8/30/2017 BELA7036 H:\Clients\Glendale\100042606 S Glendale Com Plan EIR C105745\GIS\data\Figure4.8-2_GroundwaterBasins.mxd

Groundwater levels in the San Fernando Valley Basin have undergone a general decline during recent years; however, it is assumed that the 2016/2017 water year will show an increase in groundwater levels due to increased rainfall. Probable causes of this decline include increased urbanization and runoff leaving the basin, reduced artificial recharge, drought conditions dating to 2012, and continued groundwater extractions by the cities of Los Angeles, Burbank, and Glendale. The Upper Los Angeles River Area Watermaster continues to monitor the situation, and efforts to reverse this trend are underway. A long-term solution would require close cooperation between the cities of Los Angeles, Burbank, and Glendale (ULARAW 2017a).

Verdugo Basin

The Verdugo Basin is bounded to the north by the San Gabriel Mountains; to the east by a groundwater divide, which separates the basin from the Monk Hill Subarea of the Raymond Basin; to the south and southwest by the Verdugo Mountains; and to the northwest by a groundwater divide, which separates the basin from the San Fernando Valley Basin. All the surface water channels feed into the Verdugo Wash, which is located along the west side of the basin.

The groundwater storage area of the Verdugo Basin is 4,400 acres, and the groundwater storage capacity of the Verdugo Basin is approximately 160,000 acre-feet. Utilization of groundwater supplies from the basin has been limited due to water quality problems, declining groundwater levels, and limited extraction capacity (ULARAW 2017b).

■ Surface Water Quality

The Verdugo Wash, which drains the Verdugo Mountains and flows into the Los Angeles River northeast of Griffith Park, is located along the northern border of the proposed SGCP area. A small portion of the Verdugo Wash, south of Glenoaks Boulevard in the northwestern section of the DSP area, is within the proposed SGCP.

Under section 303(d) of the CWA, states are required to develop lists of impaired water bodies. Impaired water bodies are waters for which technology-based regulations and other required controls are not stringent enough to meet the water quality standards set by states. The entirety of Verdugo Wash is lined in concrete and is identified on the 303(d) list as an impaired waterbody by the EPA. Impairments include coliform, copper, and trash (EPA 2017). Additionally, the Los Angeles River is classified as an impaired waterbody and is listed on the 303(d) list. Impairments include nitrogen compounds, algae, pH, and odor.

■ Groundwater Quality

Groundwater extracted from the San Fernando Valley Basin contains VOCs. VOCs are chemicals that evaporate easily at room temperature and contribute to the formation of ground-level ozone; these compounds are known to cause adverse health effects. Two of the most prevalent VOCs are trichloroethylene and tetrachloroethylene. Based on the levels of VOCs detected, the basin was designated as a Superfund site in the 1980s and considered by the Division of Drinking Water to be an extremely impaired source. Although the major contaminant in the basin is VOCs, chromium has also been detected in the water. The Glendale Water Treatment Plant was established in 2000 to remove the VOCs in groundwater supplies, and was later upgraded (2010) to remove chromium (GWP 2016a).

Historically, the water quality parameter of concern for groundwater from the Verdugo Basin has been high concentrations of nitrates. The high levels of nitrates are believed to come from the historical use of

septic tanks in the La Crescenta area. Wastewater needs are now serviced by sewer in this area, and it is anticipated that the nitrate levels in groundwater will decrease. Additionally, tetrachloroethylene has been detected in groundwater from the Verdugo Basin. Levels of tetrachloroethylene have been stable over the years, and the EPA has determined that no remedial action is required (GWP 2016b).

■ Flood Zones

On May 7, 1976, the Federal Insurance Administration issued a Flood Hazard Boundary map for the City; however, this map was rescinded by the Insurance Administration on November 15, 1979, because information provided to them indicated that no part of the City would be inundated by the 100-year flood. In addition, in August 1984, the Federal Emergency Management Agency (FEMA) informed City officials that no Special Flood Hazard Areas exist within the City and no Flood Insurance Rate Map would be published (ECI 2003). There are currently no FEMA identified Special Flood Hazard Areas within the proposed SGCP area (FEMA 2017).

4.8.2 Regulatory Framework

■ Federal

Safe Drinking Water Act

The Safe Drinking Water Act was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources – rivers, lakes, reservoirs, springs, and groundwater wells. The Safe Drinking Water Act authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. The EPA, states, and water systems then work together to make sure that these standards are met.

Clean Water Act

The CWA established the basic structure for regulating discharges of pollutants into the “waters of the U.S.” and regulating quality standards for surface waters. The basis of the Act was enacted in 1948 and was called the Federal Water Pollution Control Act. The Act was significantly reorganized and expanded in 1972. At this time, the CWA became the Act's common name with amendments in 1972.

The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. The EPA NPDES program controls discharges. Point sources are discrete conveyances, such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need a NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

National Pollution Discharge Elimination System

The NPDES program, created in 1972 by CWA, helps address water pollution by regulating point sources that discharge pollutants to “waters of the U.S.” The permit provides two levels of control: technology based limits and water quality based limits (if technology based limits are not sufficient to provide protection of the waterbody).

Under the CWA, the EPA authorizes the NPDES permit to state, tribal, and territorial governments, enabling them to perform many of the permitting, administrative, and enforcement aspects of the NPDES program. In states authorized to implement CWA programs, the EPA retains oversight responsibilities.

A NPDES permit is typically a license for a facility to discharge a specified amount of a pollutant into a receiving water under certain conditions. Permits may also authorize facilities to process, incinerate, landfill or beneficially use sewage sludge. The two basic types of NPDES permits issued are individual and general permits.

- An individual permit is a permit specifically tailored to an individual facility. Once a facility submits the appropriate application(s), the permitting authority develops a permit for that particular facility based on the information contained in the permit application. The authority issues the permit to the facility for a specific time period (not to exceed five years) with a requirement that the facility re-apply prior to the expiration date.
- A general permit covers a group of dischargers with similar qualities within a given geographical location. General permits may offer a cost-effective option for permitting agencies because of the large number of facilities that can be covered under a single permit.

National Flood Insurance Program

FEMA is mandated by the National Flood Insurance Act of 1968 and the Flood Disaster Act of 1973 to evaluate flood hazards. To promote sound land use and floodplain development, the FEMA provides Flood Insurance Rate Maps for local and regional planners. Flood risk information presented on Flood Insurance Rate Maps is based on historic, meteorological, hydrologic, and hydraulic data, as well as topographic surveys, open-space conditions, flood control works, and existing development.

The National Flood Insurance Program aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socioeconomic impact of disasters by promoting the purchase and retention of general risk insurance, but also of flood insurance, specifically.

■ **State**

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act, enacted in 1969, authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface and groundwater) and directs the RWQCBs to develop region-specific Basin Plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative. The purpose of these plans is to designate beneficial uses of the region's surface and groundwaters, designate water quality objectives for the reasonable protection of those uses, and establish an implementation plan to achieve the objectives.

Sustainable Groundwater Management Act of 2014

The Sustainable Groundwater Management Act requires the formation of local groundwater sustainability agencies to address conditions in their local water basins and adopt locally based management plans. The requirements of the Act include: (1) developing regulations to revise

groundwater basin boundaries; (2) adopting regulations for evaluating and implementing Groundwater Sustainability Plans and coordination agreements; (3) identifying basins subject to critical conditions of overdraft; (4) identifying water available for groundwater replenishment; and (5) publishing best management practices (BMPs) for the sustainable management of groundwater.

Water Supply Assessments

In 2001, the California State Legislature approved Senate Bill 610, which amended PRC Section 21151.9 and Sections 10910 et seq. of the Water Code, requiring the preparation of a Water Supply Assessment for large developments (e.g., more than 500 dwelling units or non-residential equivalent). These assessments, prepared by “public water systems” responsible for service, address whether adequate existing or projected water supplies are available to serve future development occurring under the proposed project, in addition to urban and agricultural demands and other anticipated development in the proposed project service area. State regulations do not specifically require the preparation of a water supply assessment for a general plan. Section 10910(c)(2) states that if the projected water demand associated with a proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan into the analysis. A Water Supply Assessment was prepared in 2016 for this project (see Appendix H of this EIR) and is discussed in Section 4.16 (Utilities & Service Systems) of this report (GWP 2016b).

■ Regional

Los Angeles County Flood Control District Code

Chapter 21 of the County Flood Control District Code establishes requirements regulating discharges to Los Angeles County Flood Control District storm drains, which run throughout the proposed SGCP area. The following discharges to county storm drains are prohibited:

- Discharges of stormwater containing pollutant concentrations that exceed or contribute to the exceedance of water quality standard.
- Non-stormwater discharges unless authorized by a NPDES permit issued by the Chief Engineer of Los Angeles County Flood Control District.
- Discharges of sanitary or septic waste or sewage from any property or residence, any type of recreational vehicle, camper, bus, boat, holding tank, portable toilet, vacuum truck or other mobile source, or any waste holding tank, container or device.
- Pollutants, leaves, dirt, or other landscape debris.

Water Quality Control Plan: Los Angeles Region

The Los Angeles Regional Board’s Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan designates beneficial uses for surface and groundwaters; sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State’s antidegradation policy; and describes implementation programs to protect all waters in the Region. In addition, the Basin Plan incorporates all applicable state and regional board plans and policies and other pertinent water quality policies and regulations.

■ Local

Glendale General Plan

The following Glendale General Plan outlines policies, goals and objectives located in the Open Space and Conservation and Safety Elements are applicable to hydrology and water quality.

Open Space and Conservation Element

- **Goal 6:** Preserve and protect valuable water and mineral resources
 - **Objective 2:** Design drainage devices in a manner that is compatible with the natural terrain and environment.
- **Goal 12:** Continue to conserve water resources and provide for the protection and improvement of water quality.
 - **Objective 4:** Adhere to the requirements of the NPDES to ensure water quality and to minimize the introduction of pollutants into drainage courses.
 - **Objective 5:** Continue Glendale’s hazardous materials collection program to minimize the potential introduction of toxics into groundwater basins and landfills.
 - **Objective 6:** Continue to monitor, inventory land uses and coordinate with the EPA to avoid groundwater pollution and improve groundwater quality with particular emphasis on industrial areas and landfills.

Safety Element

- **Goal 3:** Reduce the loss of life, injury, private property damage, infrastructure damage, economic losses, and social dislocation and other impacts resulting from flooding hazards.
 - **Policy 3-1:** The City shall investigate the potential for future flooding in the area and will encourage the adoption of flood-control measures in low lying areas of alluvial fans, along major channels, and down-gradient of large reservoirs and water tanks.
 - **Program 3.1-1:** The City shall discourage additions to, or the reconstruction of, critical facilities if such facilities are located in dam or reservoir inundation pathways unless it can be demonstrated that the proposed project and any occupants will be protected from dam or reservoir failure.

Glendale Building & Safety Code

Requirements for erosion control and water quality for grading operations are set forth in the GB&SC. Volume IA, Appendix J, GRADING, provides provisions for excavation, grading, and earthwork construction, permitting procedures, as well as grading inspection protocols and procedures. Provisions for construction related to erosion control, including the preparation of cut and fill slopes and the implementation of erosion control measures, such as check dams, cribbing, riprap, or other devices or methods, are included in Section J110. Section J113 requires NPDES compliance for all projects that require grading plans and permits within the proposed SGCP area, as well as with Glendale Municipal Code Chapters 13.42 (Stormwater and Urban Runoff Pollution Prevention Control) and 13.43 (Low Impact Development Standards).

Glendale Municipal Code

Glendale Municipal Code Chapter 13.42 (Stormwater and Urban Runoff Pollution Prevention Control) prohibits any discharges which may interfere with the operation of, or cause any damage to the storm drain system; prohibits illicit discharges and illegal connections to the storm drain system; aims to reduce stormwater runoff pollution and non-stormwater discharges to the storm drain system to the maximum extent practicable; aims to reduce pollutant loads in stormwater and urban runoff from land uses and activities identified in the municipal NPDES permit; and gives legal effect to the applicable NPDES permit in Glendale. Additionally, Glendale Municipal Code Chapter 13.43 (Low Impact Development Standards) provides development standards for an array of applicable projects defined in Section 13.43.030 to lessen the adverse impacts of stormwater runoff from development and urban runoff on natural drainage systems, receiving waters and other water bodies; to minimize pollutant loadings from impervious surfaces by requiring development projects to incorporate properly designed, technically appropriate BMPs and other low impact development strategies; and to minimize erosion and other hydrologic impacts on natural drainage systems by requiring development projects to incorporate properly designed, technically appropriate hydromodification control development principles and technologies.

Glendale Green Building Standards

The City has adopted additional measures to supplement the mandatory California Green Building Standards for new construction. The sustainable construction practices are designed to encourage a healthier environment and help protect the City's future. The measures came into effect on July 7, 2011, and the relevant measure is listed below.

- Measure 8: At least 20 percent of certain paved areas in residential projects shall be permeable.

4.8.3 Project Impacts and Mitigation

■ Analytic Method

The impact analysis is a program-level analysis that evaluates development that is reasonably foreseeable if the proposed SGCP is adopted and implemented. Although the proposed SGCP would not directly result in development, the proposed project prescribes the allowable land uses within the proposed SGCP area. Development of the land uses in the proposed SGCP area would be considered consistent with the Glendale General Plan. Based on the existing conditions described above, the impact analysis programmatically and qualitatively assesses the indirect and cumulative impacts on hydrology and water quality as a consequence of implementing the proposed SGCP area.

■ Thresholds of Significance

The following thresholds of significance are based on the 2017 CEQA Guidelines Appendix G and Glendale goals and policies. For purposes of this EIR, implementation of the proposed project may have a significant adverse impact on hydrology and water quality if it would do any of the following:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater

table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- 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; or
- Expose people or structures to risk of inundation by seiche, tsunami, or mudflow.

■ Effects Found Not Significant

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| Threshold | Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? |
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The proposed SGCP area does not include any areas within a 100-year flood hazard area (ECI 2003); therefore, implementation of the proposed project would have no impact on housing within a 100-year flood hazard area, and no mitigation is required.

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| Threshold | Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows? |
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The proposed SGCP area does not include any areas within a 100-year flood hazard area (ECI 2003); therefore, implementation of the proposed project would have no impact on structures within a 100-year flood hazard area, and no mitigation is required.

■ Less Than Significant Impacts

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| Threshold | Would the project violate any water quality standards or waste discharge requirements? |
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Impact 4.8-1 Implementation of the proposed project would not violate any water quality standards or waste discharge requirements. This would be a *less than significant* impact.

Although implementation of the proposed SGCP does not involve direct development, it allows for an increase of up to 10,337 dwelling units and 3,765 thousand square feet of nonresidential land uses at buildout throughout the proposed SGCP area. Construction activities associated with implementation of the proposed SGCP would be required to satisfy all applicable requirements of the NPDES program and Glendale Municipal Code Chapter 13.42 (Storm Water and Urban Runoff Pollution Prevention Control), and Standard Urban Storm Water Mitigation Plan (SUSMP) that are in effect at the time of development as determined by the Glendale Public Works Department. The requirements include preparation of a SWPPP for development projects that disturb more than one acre. Additionally, the California Green Building Code requires the preparation of a SWPPP for development projects that disturb less than one acre. The SWPPP would incorporate BMPs by requiring controls of pollutant discharges that utilize best available technology and best conventional pollutant control technology to reduce pollutants. Examples of best available technology and best conventional pollutant control technology include silt fences, sand bag barriers, and stabilization of construction areas. Implementation of BMPs would ensure Los Angeles RWQCB water quality standards are met during construction activities. Compliance with these regulations would result in a less than significant impact associated with construction related to water quality standards and waste discharge requirements.

The development of land uses allowable under the proposed SGCP would result in increased human activity throughout the SGCP area. This increase would potentially result in an increase in pollutant deposition due to motor vehicle operations, oil and grease residues, fertilizer/pesticide use, human/animal littering, careless material storage and handling, and poor property management. These pollutants have the potential to degrade water quality and may result in significant impacts. The quality of runoff from a site would be subject to the XWA Section 402(p) under the NPDES program. Development projects are required by the Glendale Municipal Code to comply with Storm Water and Urban Runoff Pollution Prevention Control and SUSMP. Compliance requires the identification and implementation of design features and BMPs appropriate and applicable to the project that reduce pollutant mobilization. Applicable BMPs include the filtration of stormwater runoff through planters or equivalent landscape features. Once the on-site stormwater runoff is filtered, it would be conveyed through existing curbs and into the City storm drain system. Potential water quality impacts associated with construction and operation of the proposed SGCP would be less than significant due to implementation of BMPs as specified by the NPDES permit, Storm Water and Urban Runoff Pollution Prevention Control, and SUSMP. This impact is considered less than significant, and no mitigation is required.

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| Threshold | 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 that would not support existing land uses or planned uses for which permits have been granted)? |
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Impact 4.8-2 Implementation of the proposed project would not 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. This would be a *less than significant* impact.

Between 2005 and 2014, an average of 31 percent of water use within the City had been pumped from the San Fernando Valley Basin and the Verdugo Basin. During this time, an average of 6,892 acre-feet per year was pumped from the San Fernando Valley Basin and 2,083 acre-feet per year was pumped from the Verdugo Basin. The City has established water rights to approximately 10,000 acre-feet of water per year from the San Fernando Valley Basin (the amount can increase to 10,400 if water consumption increases) and 3,856 acre-feet per year from the Verdugo Basin. The City therefore has access to 4,881 acre-feet of groundwater beyond what is currently pumped from the San Fernando and Verdugo basins (GWP 2016b).

The estimated increase in water demand associated with implementation of the proposed SGCP, as determined by the Water Supply Assessment (GWP 2016b) prepared for the proposed SGCP area, is 1,234 acre-feet per year at buildout; the current demand in the SGCP area is 4,542 acre-feet per year and the estimated water demand associated with buildout of the proposed SGCP area is 5,776 acre-feet per year (GWP 2016a). The City's water supply mix averages 31 percent from groundwater sources; conservatively assuming that this mix remains stable through the project horizon year of 2040 and that cited trends toward the increased use of recycled water and increasing conservation efforts (GWP 2016a) continue, the proposed project would increase the amount of groundwater resources pumped by approximately 383 acre-feet per year (31 percent x 1,234 acre-feet). While this would result in an increase in the amount of groundwater currently pumped from the two basins, the anticipated increase of 383 acre-feet per year would be accommodated by the amount of groundwater to which the City has rights, but does not utilize. As a result, implementation of the proposed SGCP would not substantially deplete groundwater supplies. In addition, the San Fernando and Verdugo Basins are managed by the Basin Watermaster. The Watermaster is responsible for monitoring and accounting for all groundwater extraction, with sustainability as a goal.

The proposed SGCP area is not a designated recharge area and does not serve as a primary source of groundwater recharge within the San Fernando and Verdugo basins. Additionally, as of 2011, the proposed SGCP area is approximately 98.6 percent impervious (USGS 2011); the remaining portions are largely confined to public parks and cemetery uses. The proposed SGCP does not propose any changes to those areas, and redevelopment of public parks and the Forest Lawn Memorial Park due to implementation of the proposed SGCP is unlikely. Rather, the proposed SGCP institutes new land use and zoning designations that would increase land use intensity compared to the existing regulations, but does not propose or include policies to encourage greenfield development, which would increase the amount of impervious land cover in the project area.

The potential for impacts associated with substantial depletion of groundwater and groundwater recharge associated with implementation of the proposed SGCP would be less than significant, and no mitigation is required.

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| Threshold | Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site? |
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Impact 4.8-3 Implementation of the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site. This would be a *less than significant* impact.

Although implementation of the proposed SGCP does not involve direct development, it allows for an increase of up to 10,337 dwelling units and 3,765 thousand square feet of nonresidential land uses at buildout throughout the proposed SGCP area. The proposed SGCP area is currently developed and stormwater runoff flows into existing streets and drains. Construction activities associated with development of land uses allowable under the proposed SGCP may result in wind and water soil erosion due to grading activities if soil is exposed. This impact would be considered short term (during grading/construction), because the development site would eventually be covered with impervious surface and landscaping upon completion of the construction activities. As required under the NPDES program administered by the RWQCB, developers would be required to prepare and submit a SWPPP. As previously stated, a SWPPP is required for development projects that disturb more than one acre or are required to meet the California Green Building. The SWPPP would incorporate BMPs to ensure that impacts from erosion during construction would be reduced to a level below significant. Additionally, as part of the SUSMP, any development would be required to retain the first 0.75 inches of rainfall during a 24-hour rainfall event. Compliance with the SUSMP would reduce runoff into a stream or river that would result in substantial erosion or siltation on or off site. Finally, a developer would be required to adhere to SCAQMD Rule 403 (Fugitive Dust), which would further reduce any soil erosion related impacts. This impact is considered less than significant, and no mitigation is required.

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| Threshold | Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site? |
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Impact 4.8-4 Implementation of the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. This would be a *less than significant* impact.

Although implementation of the proposed SGCP does not involve direct development, it allows for an increase of up to 10,337 dwelling units and 3,765 thousand square feet of nonresidential land uses at buildout throughout the proposed SGCP area. The proposed SGCP area is nearly fully developed, per the discussion relative to Impact 4.8-2, but implementation of the proposed SGCP would potentially increase the quantity of runoff due to the development of larger buildings associated with the proposed increased land use intensities. As part of the SUSMP and Storm Water and Urban Runoff Pollution Prevention Control, any development would be required to retain the first 0.75 inches of rainfall during a 24-hour rainfall event.

Runoff beyond what is retained on site would be conveyed via streets and gutters to storm drains around the site. As a result, implementation of the proposed SGCP would not require any substantial changes to

the existing drainage patterns on or off site, nor would it substantially affect the existing capacity of the existing storm drain system. Most storm drains within the City are maintained by the County of Los Angeles. For problem areas, the City has provided the County a “Drainage Deficiency Report” for their evaluation. It is anticipated that the Los Angeles County Department of Public Works will address these conditions as funds become available. During the past 80 years, the Los Angeles County Department of Public Works (LACDPW) and the USACE have constructed several detention or debris basins in the San Gabriel Mountains, within or to the north of Glendale, including debris basins in Cooks, Dunsmore, Shields, Eagle, Pickens and Hall Beckley canyons. At least three other debris basins have been built in the Verdugo Mountains, north of the populated areas of the City. The LACDPW also has made channel alterations, consisting primarily of concrete side-slopes and linings, for most of the major channels in Glendale. These flood control structures are presently owned and operated by the LACDPW, which has jurisdiction over the watercourses in the Glendale area, as well as the regional flood control system in Los Angeles County.

All of these structures help regulate flow in the Verdugo Channel, holding back some of the flow during intense rainfall periods that could otherwise overwhelm the storm drain system in the area (ECI 2003). This impact is considered less than significant, and no mitigation is required.

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| Threshold | Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? |
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Impact 4.8-5 Implementation of the proposed project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. This would be a *less than significant* impact.

Refer to Impact 4.8-4 above for a discussion regarding the impacts associated with alteration of a drainage pattern and on or off site flooding due to increased surface runoff. As stated above, the majority of the proposed SGCP area is developed and impervious. Although implementation of the proposed SGCP does not involve direct development, it allows for an increase of up to 10,337 dwelling units and 33,765 thousand square feet of nonresidential land uses at buildout, which could result in an increase to the amount of runoff within the proposed SGCP area. However, future development projects would be required to comply with the Storm Water and Urban Runoff Pollution Prevention Control and SUSMP. Compliance with these regulations would reduce impacts associated with runoff and stormwater drainage systems to a level below significant. This impact is considered less than significant, and no mitigation is required.

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| Threshold | Would the project otherwise substantially degrade water quality? |
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Impact 4.8-6 Implementation of the proposed project would not otherwise substantially degrade water quality. This would be a *less than significant* impact.

Refer to Impact 4.8-1 above for a discussion regarding impacts associated with water quality. As discussed above, construction activities associated with implementation of the proposed SGCP would be required to satisfy all applicable requirements of the NPDES permit, Glendale Municipal Code Chapter 13.42 (Storm Water and Urban Runoff Pollution Prevention Control), and SUSMP. Compliance with these regulations would reduce construction impacts associated with water quality to a level below significant. Additionally, compliance with Storm Water and Urban Runoff Pollution Prevention Control

and SUSMP would reduce any operational impacts associated with water quality to a level below significant. This impact is considered less than significant, and no mitigation is required.

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| Threshold | Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam? |
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Impact 4.8-7 Implementation of the proposed project would not 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. This would be a *less than significant* impact.

There are seven dams located in the Glendale area large enough that the State requires inundation maps for the dam facilities. Additionally, the Glendale area has several smaller debris basins that are not subject to State regulations, because they are not large enough to require inundation maps. All of the larger dams and reservoirs are more than 50 years old and are not likely designed to withstand the strong ground shaking that the area is capable of experiencing.

The proposed SGCP area is located within the dam inundation area of the Glenoaks Reservoir. The reservoir is located in an area where several inactive faults have been identified; however, secondary faulting, in response to movement on other faults, could occur in the area. The dam inundation area runs along the east-southeast and southern portion of the proposed SGCP area. The land uses in the areas identified within the dam inundation area include: Moderate Multi-Family, Medium Multi-Family, Medium/High Multi-Family, Village Center, Main Street, Mixed-Use Low, Urban Center, Industrial/Creative, and Special Districts (Transportation, Civic, Campus, Cemetery). These areas currently contain a large number of people and structures within the dam inundation area. As detailed in Section 3.2.2 of this program EIR, the majority of area that falls within the dam inundation area are identified as areas to improve and areas to maintain. Only the southern portion of the proposed SGCP area that is within the dam inundation area is expected to experience a significant amount of change.

Although there would be an increase in the number of people or structures within the dam inundation area, the Glendale General Plan Safety Element Goal 3 [Reduce the loss of life, injury, private property damage, infrastructure damage, economic losses, and social dislocation and other impacts resulting from flooding hazards], Policy 3.1 [The City shall investigate the potential for future flooding in the area and will encourage the adoption of flood-control measures in low-lying areas of alluvial fans, along major channels, and downgradient of large reservoirs and water tanks], and Program 3.1-1 [The City shall participate in the National Flood Insurance Program.], would ensure safeguards are in place, including infrastructure and flood insurance policies, to reduce the risk to a level below significant.

Future development of land uses allowable under the proposed SGCP that fall within a dam inundation area would be subject to a separate environmental review or determination once development plans are submitted to the City's Permit Services Center. Any potential impacts associated with dam failure would be identified during environmental review process. Environmental review of development projects associated with implementation of the proposed SGCP, along with compliance with Program 3-1.1 would reduce any impact associated with dam failure below a level of significance. This impact is considered less than significant, and no mitigation is required.

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| Threshold | Would the project expose people or structures to risk of inundation by seiche, tsunami, or mudflow? |
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Impact 4.8-8 **Implementation of the proposed project would not expose people or structures to risk of inundation by seiche, tsunami, or mudflow. This would be a *less than significant* impact.**

The proposed SGCP area is not located downslope of any large body of water that would produce a seiche, which are wave oscillations in an enclosed or semi-enclosed body of water. Furthermore, the proposed SGCP area is not in a coastal area and would not be subject to a tsunami. However, portions of the proposed SGCP area are susceptible to mudflow due to proximity to slopes.

Intense rainfall events, or long periods of sustained rainfall, can saturate the soils even on a gentle slope, with the potential for the soils, and the underlying slope, to become unstable. If, in response to gravity, the saturated soils begin to move down slope, they can form mudflows. The southeastern portion of the proposed SGCP area, near the Adams Hill area, is the only area prone to mudflows. The proposed project identifies this area as an area to maintain, which means the existing Glendale General Plan land use and zoning ordinance regulations would remain unchanged; therefore, implementation of the proposed SGCP would not result in increased risk of exposure to mudflow inundation. This impact is considered less than significant, and no mitigation is required.

4.8.4 Cumulative Impacts

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| Threshold | Would the project violate any water quality standards or waste discharge requirements? |
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The cumulative context for water quality is past, existing, and reasonably foreseeable development in the Upper Los Angeles River watershed. The sub-watershed (Scholl Canyon) that receives storm flows from the proposed SGCP area has water quality impairments (pollutants or stressors) as determined by the Los Angeles RWQCB, resulting in the need for coliform, copper, and trash Total Maximum Daily Loads. Stormwater runoff from cumulative development in the watershed, including development that could be facilitated by the proposed project, would contribute to water quality impairments if measures are not implemented to minimize pollutant levels in runoff. With respect to construction, all development within the Scholl Canyon sub-watershed is required to conform to applicable discharge requirements. Cumulative development projects in incorporated cities adjacent to the proposed SGCP area would be required to implement construction BMPs, as would projects facilitated by adoption and implementation of the proposed project. The City and surrounding jurisdictions are required to impose these requirements.

As required by the SUSMP, all foreseeable development projects, including projects that could be constructed in the proposed SGCP area would be required to implement operational BMPs to control release of pollutants in stormwater runoff. Requirements of the SUSMP are enforced through the City's plan approval and permit process, and all new development projects are subject to City inspection. Therefore, the proposed project's contribution to known water quality impairments would not be cumulatively considerable, and cumulative water quality impacts would be less than significant.

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| Threshold | 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 that would not support existing land uses or planned uses for which permits have been granted)? |
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The cumulative context for groundwater is past, existing, and reasonably foreseeable development in areas surrounding the San Fernando and Verdugo basins. The increased population associated with cumulative projects in the project area would increase the amount of groundwater pumped from the basins; however, the Water Supply Assessment prepared in 2016 for this project (see Appendix I of this EIR) concluded that Glendale Water & Power has enough water supplies (39,540 acre-feet per year) to meet the requirements of the City, including the proposed SGCP. Currently, Metropolitan Water District has water supplies available to meet all projected water demands under various hydrological conditions, and additional sources of water, such as the emergency water service connections with neighboring cities, Los Angeles and Burbank will add to the reliability of the system and ensure that Glendale Water & Power will meet the future water demands of the proposed SGCP area (GWP 2016b). Further, development projects that utilize groundwater from the basins would be required to conduct a water needs assessment study in order to show that the growth associated with future projects can have a portion of their water needs accommodated by groundwater from the two basins. Notably, the three municipalities that utilize groundwater from the San Fernando and Verdugo basins (Burbank, Los Angeles, and Glendale) are nearly fully built-out and new re-development is more likely than new development. Re-development projects would not significantly increase the amount of impervious surface in the area.

As mentioned in the discussion of Impact 4.8-2, the San Fernando and Verdugo basins have access to an additional 4,881 acre-feet of groundwater beyond what is currently pumped from the San Fernando and Verdugo basins. Glendale foresees very little change in available sources and the amount of water supply needed to meet water demands, and plans to utilize the City’s full water rights in the Verdugo Basin with the addition of new wells; public recycled water projects to further reduce potable water demands are expected to do so by up to 300 acre-feet per year (GWP 2016a). Groundwater levels in the San Fernando and Verdugo basins would be able to accommodate growth associated with the cumulative projects. Therefore, the proposed SGCP’s contribution to a depleted groundwater supply or interference with groundwater recharge would not be cumulatively considerable, and the cumulative groundwater impacts would be less than significant.

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| Threshold | Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site? |
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The cumulative context for drainage pattern alteration is past, existing, and reasonably foreseeable development within the Upper Los Angeles River watershed. As noted in the discussion of Impact 4.8-3, all future development in the Upper Los Angeles River watershed would be required to comply with the municipal NPDES permit. Compliance with the permit requires development projects to identify BMPs that would reduce any potential erosion or siltation associated with the alteration of an existing drainage pattern to a level below significance. Cumulative projects identified in Chapter 3 would not result in the alteration of an existing drainage pattern in the Upper Los Angeles River watershed. Therefore, the proposed project’s contribution to an altered drainage pattern would not be cumulatively considerable, and cumulative drainage impacts are less than significant.

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| Threshold | Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site? |
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The cumulative context for drainage pattern alteration is past, existing, and foreseeable development within the Upper Los Angeles River watershed. As noted in the discussion of Impact 4.8-4, all future development in the Upper Los Angeles River watershed would be required to comply with the SUSMP and Storm Water and Urban Runoff Pollution Prevention Control. Compliance would require any cumulative project to retain the first 0.75 inches of rainfall during a 24-hour rainfall event. Adherence to these plans would reduce any cumulative project impacts associated with increased surface runoff to a level below significant.

Development of land uses allowable under the proposed project would require compliance with the SUSMP and Storm Water and Urban Runoff Pollution Prevention Control by incorporating BMPs to ensure that impacts associated with increased surface runoff are reduced to a level below significant. Therefore, the proposed project contribution to an altered drainage pattern would not be cumulatively considerable, and cumulative drainage impacts are less than significant.

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| Threshold | Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? |
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As noted in the discussion of Impact 4.8-4, all future development in the Upper Los Angeles River watershed would be required to comply with the SUSMP and Storm Water and Urban Runoff Pollution Prevention Control. Compliance would require any cumulative project to retain the first 0.75 inches of rainfall during a 24-hour rainfall event. Adherence to these plans would reduce any cumulative project impacts associated with increased surface runoff to a level below significant. Therefore, implementation of the proposed project would not be cumulatively considerable, and cumulative impacts associated with stormwater would be less than significant.

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| Threshold | Would the project otherwise substantially degrade water quality? |
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As required by the SUSMP, all foreseeable development projects, including projects that could be constructed in the proposed SGCP area would be required to implement operational BMPs to control release of pollutants in stormwater runoff. Requirements of the SUSMP are enforced through the City's plan approval and permit process, and all new development projects are subject to City inspection. Therefore, the proposed projects contribution to degraded water quality would not be cumulatively considerable, and cumulative drainage impacts would be less than significant.

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| Threshold | Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? |
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As stated above in Effects Found Not Significant (Section 4.8.3), the proposed SGCP area is not located in an identified 100-year flood hazard area; therefore, the proposed project would not contribute to a cumulative impact associated with a 100-year flood hazard area.

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| Threshold | Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows? |
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As stated above in Effects Found Not Significant (Section 4.8.3), the proposed SGCP area is not located in an identified 100-year flood hazard area; therefore, the proposed project would not contribute to a cumulative impact associated with a 100-year flood hazard area.

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| Threshold | Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam? |
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Cumulative projects would increase development within dam inundation zones. Specific projects that would increase the number of people and/or dwelling units within a dam inundation zone include projects located at 1820 South Brand Boulevard (26 live/work units), 1821 South Brand Boulevard (38 residential units), and 913 Adams Street (18 residential units). These projects, along with other projects within the City, would be required to comply with Glendale General Plan Safety Element Goal 3, Policy 3.1, and Program 3.1-1 1 [The City shall participate in the National Flood Insurance Program.]. Compliance with these regulations would reduce any potential impacts associated with dam failure to a level below significant.

As described in Impact 4.8-7, portions of the proposed SGCP area are located within a dam inundation zone. Development of land uses under the proposed project would be required to comply with Program 3.1-1, and each of the proposed development projects would have to undergo a separate environmental review. Adherence to these regulations would reduce any impact associated with dam or levee failure. Therefore, the proposed projects contribution to risks associated with dam or levee failure would not be cumulatively considerable, and cumulative drainage impacts would be less than significant.

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| Threshold | Would the project expose people or structures to risk of inundation by seiche, tsunami, or mudflow? |
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The proposed project is not located in an area susceptible to seiche or tsunami; and therefore, would not contribute to cumulative impacts associated with seiche or tsunami. As described in Impact 4.8-8, the proposed SGCP area includes areas susceptible to mudflows; however, the southeastern portion of the proposed SGCP area, near the Adams Hill area, is not proposed for change under implementation of the proposed project. Individual projects in areas not changed by the proposed SGCP would be required to undertake project level CEQA analysis to determine the level of risk of mud flows. Therefore, the proposed project would not contribute to a cumulatively considerable impact associated with mudflow, and would be considered less than significant.

4.8.5 References

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