This chapter outlines the regulatory framework, describes the existing hydrological conditions of the project site, and evaluates the potential impacts associated with the project. This chapter also includes a discussion of cumulative impacts to hydrology and water quality. The Water Supply Assessment (WSA) prepared for the project\(^1\) is included in this EIR as Appendix G. The WSA discusses the broader potential for water system and basin-scale impacts due to the proposed water use at the project site, as required by Section 10910 of the California Water Code (and as revised by Senate Bill 610).

A. Regulatory Framework

The following section discusses hydrology, floodplains, and water quality related policies from regulatory agencies that have jurisdiction over the Park site. Although this section presents a comprehensive set of policies, California Government Code Section 53091 states that State and county agencies and their properties are not required to comply with local agency policies. However, in the best interest of the project, State and county agencies strive to meet consistencies with relevant local agency policies.

1. Federal and State Regulations

The California State Water Resources Control Board (State Board) and the nine Regional Water Quality Control Boards (RWQCBs) have the authority in California to protect and enhance water quality, both through their designation as the lead agencies in implementing the Section 319 non-point source program of the Federal Clean Water Act and from the State’s primary water-pollution control legislation, the Porter-Cologne Act. The San Francisco Bay RWQCB (Region 2) office guides and regulates water quality in streams and aquifers within portions of the nine counties surrounding the San Francisco Bay through designation of beneficial uses, establishment of water-quality objectives, administration of the National Pollution Discharge Elimination System (NPDES) permit program for stormwater and construction site

\(^1\) Balance Hydrologics, 2010, Water Supply Assessment for the Proposal Martial Cottle Park, San Jose, California.
runoff, and Clean Water Act Section 404 water-quality certification where development results in fill of jurisdictional wetlands or waters of the U.S.

a. Clean Water Act
The United States Environmental Protection Agency (U.S. EPA) is responsible for water quality management and administers the federal Water Pollution Control Act Amendments of 1972 and 1987, known as the Clean Water Act (CWA). The 1972 amendment established regulations for discharge of pollutants to waters of the U.S. from point sources. The 1987 amendment added Section 402(p), which established a framework for regulating non-point source stormwater discharges under the NPDES. The EPA is authorized to delegate implementation of these regulations to state agencies.

Under Section 404 of the Clean Water Act the U.S. Army Corps of Engineers (Corps) has jurisdiction to issue permits regulating the placement of dredged or fill material into waters of the U.S. The Corps determines whether a project applicant requires a nationwide permit or an individual permit. An individual permit is required if the impacts are more than minimal or if the project does not act in accordance with the nationwide permit conditions. Before the Corps issues a permit a project must comply with the guidelines established in Section 404(b) (1) of the Clean Water Act. The first step to this process is to receive a Section 401 water quality certification or a waiver from the RWQCB. The conditions of the Section 401 permit must be included in the 404 permit.

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2 The term "point source" means any discernible, confined and discrete conveyance of discharge, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

3 Non-point source pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrologic modification. The term "non-point source" is defined to mean any source of water pollution that does not meet the legal definition of "point source" in section 502(14) of the Clean Water Act, as described above.
The 1987 amendments to the CWA established the Section 319 Non-point Source Management Program. Section 319 addresses the need for greater federal leadership to help focus State and local non-point source efforts. Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific non-point source implementation projects.

The State of California is required by Section 303(d) of the federal CWA to provide the U.S. EPA with a list of water bodies considered by the State to be impaired (i.e., not meeting water quality standards and not supporting their beneficial uses). The list also identifies the pollutant or stressor causing impairment, and establishes a schedule for developing a control plan to address the impairment, typically a Total Maximum Daily Load (TMDL). The TMDL specifies the amount of the target pollutant that the water body can sustain on a daily or annual basis and is established by amending the water quality control plan (Basin Plan). TMDLs are prepared by the RWQCBs and result in amendments to the Basin Plan which must be approved by the EPA.

The Guadalupe Reservoir and the Guadalupe River are included in the 303(d) list due to impaired water quality for mercury and diazinon. The San Francisco Basin Plan was amended on November 16, 2005 by Board Resolution R2-2005-0063 to establish a TMDL to reduce diazinon and pesticide-related toxicity in Bay Area urban creeks, including Coyote Creek, Guadalupe River, Los Gatos Creek, and Stevens Creek. The TMDL will become effective upon U.S. EPA approval. The Guadalupe River Watershed mercury TMDL was adopted by the San Francisco Bay RWQCB on October 8, 2008 and has been approved by the State Water Board, the Office of Administrative Law, and the U.S. EPA. The proposed TMDL consists of concentration- and mass-based allocations which will be achieved by both reducing mercury inputs from waste generated from former mining operations and urban runoff and minimiz-

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ing the transformation of mercury to methylmercury in impoundments and reservoirs.

b. Rivers and Harbors Appropriation Act
The Rivers and Harbors Appropriation Act of 1899 also gives the Corps authority to regulate activities including dredging, disposal of dredged or fill material, or any other activity that could affect the extent of reach of traditionally navigable waters of the U.S.

c. Porter-Cologne Act
The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) of 1969 is California's statutory authority for the protection of water quality. Under the act, the State must adopt water quality policies, plans, and objectives that protect the State’s waters for the use and enjoyment of the people. The act sets forth the obligations of the State Board and the RWQCB to adopt and periodically update water quality control plans (Basin Plans). Basin Plans are the regional water quality control plans required by both the Clean Water Act and the Porter-Cologne Act in which beneficial uses, water quality objectives and implementation programs are established for each of the nine regions in California. The project area falls under the Basin Plan for the San Francisco Bay Basin. The Porter-Cologne Act also requires waste dischargers to notify the RWQCBs of their activities through the filing of Reports of Waste Discharge (RWD) and authorizes the State Board and RWQCBs to issue and enforce waste discharge requirements (WDRs), NPDES permits, Section 401 water quality certifications, or other approvals.

d. National Pollutant Discharge Elimination System
The EPA has delegated management of California’s NPDES Municipal Stormwater Permit program to the State Board and the nine RWQCB offices. For San Jose, the county NPDES Municipal Stormwater Permit regulates urban runoff discharges based on the 1987 amendments to the Section 402 (p) of the CWA. Since the first five-year permit was issued in 1990, the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) has successively implemented a series of comprehensive stormwater management plans for urban runoff management meeting RWQCB standards. When the permit was renewed in 2001, the RWQCB included new design standards for runoff treatment control measures from new development.
and significant redevelopment. The reissued permit also requires development of a Hydrograph Modification Management Plan (HMP) to manage increased peak runoff flows and volumes (hydromodification) and avoid erosion of stream channels and degradation of water quality caused by new and redevelopment projects. The permit was issued to cover “surface runoff generated from various land uses in all the hydrologic sub basins in the basin which discharge into watercourses, which in turn flow into South San Francisco Bay.” The permit is a non-point source discharge permit.

The RWQCB has conveyed responsibility for implementation of stormwater regulations in the vicinity of the project site to the member agencies of SCVURPPP. SCVURPPP is an association of thirteen cities and towns in the Santa Clara Valley, together with the County of Santa Clara and the Santa Clara Valley Water District (SCVWD). SCVURPPP incorporates regulatory, monitoring, and outreach measures aimed at improving the water quality of South San Francisco Bay and the streams of the Santa Clara Valley to reduce pollution in urban runoff to the “maximum extent practicable.” SCVURPPP maintains compliance with the NPDES Permit and promotes stormwater pollution prevention within that context. Compliance with the NPDES Permit is mandated by State and federal statutes and regulations. Participating agencies (including the City of San Jose) must meet the provisions of the County permit by ensuring that new development and redevelopment mitigate water quality impacts to stormwater runoff both during the construction and operation of projects.5

Projects modifying more than 1 acre of land (in aggregate) are required to submit a Notice of Intent to the State Board and apply for coverage under the NPDES Construction General Permit. Administration of these permits has not been delegated to cities, counties, or RWQCBs and remains with the State Board. Enforcement of permit conditions, however, is the responsibility of RWQCB staff, assisted by local municipal or county staff. The County of Santa Clara requires applicants to prepare a Storm Water Pollution Prevention Plan (SWPPP) and submit it for review prior to commencing construction. Once construction begins, the SWPPP must be kept on-site and updated as needed while construction progresses. The SWPPP details site-specific best management practices (BMPs) to control erosion and sedimentation and

5 City of San Jose, 2007, City of San Jose 2020 General Plan, adopted 1994.
maintain water quality during the construction phase. The SWPPP also contains a summary of the structural and non-structural BMPs to be implemented during the post-construction period, pursuant to the non-point source practices and procedures encouraged by SCVURPPP and the RWQCB.

e. Beneficial Uses
The RWQCBs guide and regulate water quality in streams and aquifers through designation of beneficial uses and establishment of water-quality objectives that must be met to protect these uses. Beneficial uses and objectives for each region are described in the Basin Plan for that region. The Project is within Region 2, the San Francisco Bay region. Beneficial uses are not listed for Canoas Creek or Guadalupe River but are listed for Guadalupe Reservoir which is upstream of the project site; beneficial uses include municipal and domestic supply (MUN), groundwater recharge (GWR), cold freshwater habitat (COLD), fish spawning (SPWN), warm freshwater habitat (WARM), wildlife habitat (WILD), and contact and non-contact recreation (REC-1, REC-2).

The San Francisco RWQCB Basin Plan has set groundwater objectives to “maintain high quality groundwater (i.e. background levels)” so that groundwater does not contain concentrations of chemical constituents in amounts that adversely affect beneficial uses.6

2. Local Policies
a. The Santa Clara Basin Watershed Management Initiative
In 1996, the State Board and the EPA initiated a broad stakeholder effort to encourage local stewardship in the Santa Clara Basin as part of the statewide Water Management Initiative (WMI). The Santa Clara Basin WMI is a broad based stakeholder group of 32 signatories from local, State, and federal public agencies, business and trade associations, and civic and environmental groups and programs. The declared purpose of the WMI is “to develop and implement a comprehensive watershed management program – one that recognizes that healthy watersheds mean addressing water quality problems and quality of life issues for the people, animals and plants that

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6 California Regional Water Quality Control Board: San Francisco Bay Region, 2007, Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin (Region 2), page 294.
live in the watershed.” The WMI first established a mission statement, goals, planning objectives for development of a watershed action plan, implementation objectives, and a framework for conducting a watershed assessment. The most outstanding successes of the WMI have been in sustaining organizational continuity, providing a forum for stakeholder input on regulatory actions, and producing a variety of outreach materials for the general public to assist in natural resource protection. The WMI has continued to develop its foundation by producing watershed assessments (2002), and a watershed action plan (2003), and by further developing its priorities for implementation to protect and improve water quality (2005).

b. Fisheries and Aquatic Habitat Collaborative Effort (FAHCE)
FAHCE is a cooperative, multi-party stakeholder process for resolving a water rights complaint against SCVWD. The complaint was filed before the State Board for alleged violations relative to cumulative impacts on salmon and steelhead and their habitats within the Guadalupe River, Coyote Creek, and Stevens Creek. The FAHCE participants are collecting existing information and undertaking a series of studies to provide the technical basis to address the water rights challenge regarding fisheries and aquatic habitat management as they relate to the SCVWD’s water supply operations in the north county. Participants include the SCVWD, CDFG, the Natural Heritage Institute (on behalf of Guadalupe-Coyote Resource Conservation District, and others), National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and the City of San Jose.

c. County of Santa Clara, Division of Agriculture
The County of Santa Clara, Division of Agriculture’s (Division) primary enforcement mission is to: (1) ensure the safe, responsible, and judicious use of pesticides by farmers, pest control companies, government, industry, and the general public; (2) ensure a wholesome and healthful food supply; (3) prevent the introduction, establishment, and spread of destructive insects, plant diseases and weeds into the County’s urban and agricultural areas. They regulate the use, storage and disposal of all pesticides used in Santa Clara County. Use of federally registered pesticides must be documented through the Division by submitting a permit application, and attending annual training to ensure the user is properly educated in safe use of the pesticide.
d. Santa Clara County General Plan
The Santa Clara County General Plan contains the goals, strategies, policies, and implementing actions that guide in the overall land use development of the county. Many cities within the county, including the City of San Jose, have general plans that contain similar policies to the County’s plan. The goals and policies relevant to the hydrology and water quality components of the project are listed in Table 4.10-1.

e. Water Resources Protection Ordinance (Ordinance 06-1).
On October 24, 2006, the SCVWD adopted the Water Resources Protection Ordinance (Ordinance 06-1). This ordinance established the policy through which, beginning on February 28, 2007, the SCVWD issues permits for modifications, entry, use, or access to SCVWD facilities or easements to a person or entity. This ordinance was adopted following the creation of the guidelines and standards for land use near streams by the Santa Clara Valley Water Resources Protection Collaborative (Collaborative). The Collaborative was formed in 2003 and includes the SCVWD and representatives from the County of Santa Clara, the cities within the County, the Guadalupe-Coyote Resource Conservation District, the San Francisco Bay RWQCB, and representatives of various community interests. The Collaborative members share the water and watershed resources protection goals of flood management, drinking water quality and adequate quantity, surface and groundwater quality and quantity, and habitat protection and enhancement throughout the County.

f. Flood Protection
The SCVWD is responsible for balancing flood protection needs with the protection of natural water courses and habitat in the Santa Clara Valley. SCVWD holds an easement on the segment of Canoas Creek located on the project site and for the

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<table>
<thead>
<tr>
<th>Strategy/Policy Number</th>
<th>Strategy/Policy Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy C-RC 18</td>
<td>Water quality countywide should be maintained and improved where necessary to ensure the safety of water supply resources for the population and the preservation of important water environments and habitat areas.</td>
</tr>
<tr>
<td>Policy C-RC 20</td>
<td>Adequate safeguards for water resources and habitats should be developed and enforced to avoid or minimize water pollution of various kinds, including:</td>
</tr>
<tr>
<td></td>
<td>a. erosion and sedimentation;</td>
</tr>
<tr>
<td></td>
<td>b. organic matter and wastes;</td>
</tr>
<tr>
<td></td>
<td>c. pesticides and herbicides; [...]</td>
</tr>
<tr>
<td></td>
<td>d. effluent from inadequately functioning septic systems;</td>
</tr>
<tr>
<td></td>
<td>e. effluent from municipal wastewater treatment plants;</td>
</tr>
<tr>
<td></td>
<td>f. chemicals used in industrial and commercial activities and processes;</td>
</tr>
<tr>
<td></td>
<td>g. industrial wastewater discharges;</td>
</tr>
<tr>
<td></td>
<td>h. hazardous wastes; and</td>
</tr>
<tr>
<td></td>
<td>i. non-point source pollution.</td>
</tr>
<tr>
<td>Strategy #1</td>
<td>Reduce non-point source pollution.</td>
</tr>
<tr>
<td>Policy C-RC 22</td>
<td>Countywide, compliance should be achieved with the requirements of the National Pollution Discharge Elimination System (NPDES) permit for discharges into S.F. Bay, and to that end, the Countywide Nonpoint Source Pollution Control Program should receive the full support and participation of each member jurisdiction.</td>
</tr>
</tbody>
</table>


Snell Pipeline (a water distribution main located on the eastern portion of the project site along Snell Avenue) and holds sufficient rights to provide maintenance on the two areas. Any work that occurs within the SCVWD easements or that will directly impact these facilities requires an SCVWD permit.

The SCVWD has the primary responsibility for flood protection capital projects on stream channels. Though the proposed project is located within City of San Jose's
Urban Service Area, it is on State/County-owned land and is therefore not directly subject to City stream and floodplain policies. However, given the proximity of the project to areas of City jurisdiction, some coordination may be necessary to maintain consistency and proper function of floodplain areas.

B. Existing Conditions

The hydrologic, drainage, and water quality assessment of the project site in this section is based upon:

- Prior hydrologic analysis in the project area\textsuperscript{10,11} 
- Site observations 
- Water quality samples collected for this EIR from Canoas Creek and two on-site wells at the Life Estate 
- Historical data obtained from Department of Water Resources, Santa Clara Valley Water District and other local and federal agencies.

1. Climate

The project site is located within a Mediterranean-type climate zone, with almost all precipitation falling between the months of October and May. Annual average rainfall amounts in the region vary significantly due to topography. Higher elevations in the Santa Cruz Mountains can receive 40 to 60 inches per year, while the Valley floor in the vicinity of downtown San Jose receives on average about 15 inches annually. Annual average rainfall for San Jose is similar to that at the Park, with the last 100 years showing variability in total rainfall. Periods of abundant winter precipitation and prolonged periods of drought are both frequent in the historical record. For example, the average annual rainfall for San Jose is approximately 15 inches per year but annual rainfall has ranged less than 5 to over 30 inches between 1875 and 2005. Potential evapotranspiration rates are relatively constant from year to year, with an

\textsuperscript{10} County of Santa Clara Parks and Recreation Department, 2009, \textit{Martial Cottle Park Final Resource Inventory}. 

4.10-10
annual average value of 50 inches in San Jose between 1987 and 2002. Rates rise in response to warm summer temperatures and are typically higher than precipitation on an annual basis. It is estimated that between 16 and 34 percent of the precipitation that falls in various portions of the Santa Clara Basin becomes runoff.\textsuperscript{12} Monthly rainfall and evapotranspirative demand data is presented in Table 4.10-2.

Temperatures in the Santa Clara Basin tend to be fairly mild, and rarely drop far below freezing in the valley floor. Over the past decade, temperatures at the San Jose International Airport ranged between 28 to 104 degrees Fahrenheit, with mean annual temperature at 60 degrees Fahrenheit.

2. Soils

The soils in the project site are dominantly fine-grained and poorly drained soils developed on alluvium. The soil types include Clear Lake clay, Orestimba silty clay loam, and Sunnyvale silty clay. These soils are rated as Hydrologic Soil Group D, which indicates high runoff potential (low infiltration rates).\textsuperscript{13} Although ponding is described to occur in these types of soils, the Donor’s lessee explained that ponding occasionally occurs within the western central portion of the Project site, but rarely occurs in other portions of the property. The soil description of the Donor and Donor’s lessee indicates more sand and gravel is present on-site than would be expected based on the Natural Resources Conservation Service descriptions, which would increase the infiltration rates compared to the mapped soil types. The sand and gravel referred to is likely the alluvium beneath the developed soil profile (see Figure 4.8-3, Project Site Soils, in Chapter 4.8, Geology and Soils).

\textsuperscript{11} Ninyo & Moore Geotechnical and Environmental Sciences Consultants, 2003, Phase I Environmental Site Assessment for the Lester Property – 5285 Snell Avenue.

\textsuperscript{12} Foster, E. and Hecht, B., 1999, Regional setting for the SCVURPP watershed planning process.

\textsuperscript{13} U.S. Department of Agriculture, 1968, Soil Conservation Service, Soils of Santa Clara County.
### Table 4.10-2  Mean Monthly Rainfall and Evapotranspirative Demand

<table>
<thead>
<tr>
<th>Month</th>
<th>Mean Monthly Precipitation(^a) (Inches)</th>
<th>Mean Monthly Reference (ETo) Evaporation(^b) (Inches)</th>
<th>Soil Moisture Deficit(^c) (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>0.71</td>
<td>3.61</td>
<td>2.90</td>
</tr>
<tr>
<td>November</td>
<td>1.51</td>
<td>1.8</td>
<td>0.29</td>
</tr>
<tr>
<td>December</td>
<td>2.48</td>
<td>1.36</td>
<td>-1.12</td>
</tr>
<tr>
<td>January</td>
<td>2.85</td>
<td>1.35</td>
<td>-1.50</td>
</tr>
<tr>
<td>February</td>
<td>2.55</td>
<td>1.87</td>
<td>-0.68</td>
</tr>
<tr>
<td>March</td>
<td>2.37</td>
<td>3.45</td>
<td>1.08</td>
</tr>
<tr>
<td>April</td>
<td>1.13</td>
<td>5.03</td>
<td>3.90</td>
</tr>
<tr>
<td>May</td>
<td>0.47</td>
<td>5.93</td>
<td>5.46</td>
</tr>
<tr>
<td>June</td>
<td>0.10</td>
<td>6.71</td>
<td>6.61</td>
</tr>
<tr>
<td>July</td>
<td>0.02</td>
<td>7.11</td>
<td>7.09</td>
</tr>
<tr>
<td>August</td>
<td>0.05</td>
<td>6.29</td>
<td>6.24</td>
</tr>
<tr>
<td>September</td>
<td>0.23</td>
<td>4.84</td>
<td>4.61</td>
</tr>
<tr>
<td>Annual Total</td>
<td>14.47</td>
<td>49.35</td>
<td>34.88</td>
</tr>
</tbody>
</table>

**Notes:** Water Year Basis: October-September

\(^a\) Mean monthly precipitation based on historical records of several different NCDC stations located in downtown San Jose from 1875 through 2005. The current station is located near the San Jose Airport at 37° 22’N and 121° 55’W at 51 feet above mean sea level.

\(^b\) Mean monthly reference evapotranspiration (ETo) is defined as the evapotranspiration of a broad expanse of well watered 4- to 6-inch-tall cool-season grass. Monthly ETo values are based on CIMIS Station #69, San Jose, CA data from June, 1987 through November, 2002.

\(^c\) Wetting of dry soils early in the wet season must satisfy the soil moisture deficit before percolating rainfall passes beneath the rooting depth and reaches the water table.
3. Hydrology and Surface Water Drainage
The topography of the Santa Clara Valley, a northwest-southeast trending structural depression, largely reflects active tectonics associated with the fault system of the San Andreas plate boundary. The valley floor is nearly flat along the San Francisco Bay, with gentle undulations and local, low hills to the south extending upward approximately 350 feet above mean sea level (msl) at the valley’s narrowest point, north of the City of Morgan Hill. The valley is bounded in the southwest and east by Santa Cruz Mountains and Diablo Range, respectively.

Situated slightly east of the valley axis at an elevation of approximately 160 feet msl, the entire project site is relatively flat, with an elevation difference no greater than 10 feet within the property. Stormwater runoff from the project site currently drains to Canoas Creek. Canoas Creek is part of the surface water system in the Santa Clara Valley which includes streams, fourteen dams, and a system of aqueducts, pipelines, and storm drains. Canoas Creek was realigned and straightened in the late 1890s or early 1900s, then subsequently converted to a trapezoidal channel with a concrete bottom in the late 1960s by the SCVWD.\textsuperscript{14} This design is common in the urban areas of Santa Clara County, implemented to control flooding.\textsuperscript{15}

The bed of Canoas Creek located at the project site is 12 feet wide and the walls, which are both concrete and earthen, angle upward to an approximate width of 30 feet from bank to bank at the top of the channel. The creek channel is about 12 feet deep. Canoas Creek transports flows into the main channel of the Guadalupe River located north of the site. The SCVWD Flood Alert System has operated a gage on Canoas Creek at Almaden Expressway (north of the project site, where the drainage area is 18.61 square miles) since October 1, 1977. Mean daily flow has not exceeded 800 cubic feet per second (cfs) at that station during this record. Elevated levels in the creek occurred in the 1980s due to diversions from the IBM Corporation, which aberrantly increases the historical mean daily flow to 8.2 cfs; without this augmented flow the historical mean daily flow is 5.1 cfs. The creek does not go dry in the sum-

\textsuperscript{14} Ninyo & Moore Geotechnical and Environmental Sciences Consultants, 2003, Phase I Environmental Site Assessment for the Lester Property – 5285 Snell Avenue.

mer, likely due to “nuisance flows” from the surrounding urban areas\textsuperscript{16} (see Figure 4.10-1).

The project site and Canoas Creek are located within the Guadalupe River Watershed, which encompasses approximately 170 square miles.\textsuperscript{17} The river’s headwaters are located in the eastern Santa Cruz Mountains and drain to the Bay through Alviso Slough. The Guadalupe River begins at the confluence of Guadalupe Creek and Alamitos Creek (to which Calero Creek is a tributary). Downstream from this point the watershed is heavily urbanized. Important tributaries include Ross Creek, Canoas Creek, and Los Gatos Creek. The lower segments of the creek convey high volumes of treated effluent from wastewater treatment facilities to San Francisco Bay; the flow regime and quality of water in these segments is dominated by the treated-effluent releases.

Since 1866, the Guadalupe River and its tributaries have been the focus of several drainage and flood-control modification projects. Approximately 21 percent of the channels in the watershed have been converted to concrete or rock-lined channels, 38 percent are manmade earthen channels, and only 40 percent have been left unmodified.\textsuperscript{18} During the 73-year period of record (1930 to 2003) at the former United States Geological Survey (USGS) gage just below the confluence with Los Gatos Creek (USGS Station 11169000), flows in the Guadalupe River were seasonal, with a maximum peak flow of 11,000 cfs recorded in 1995 and typically no flow recorded for several days during August or September. Flows are partially regulated by the SCVWD which operates major reservoirs in the watershed, including Guadalupe Reservoir on Guadalupe Creek. The SCVWD augments dry season flows in the Guadalupe River and its tributaries for the purposes of groundwater recharge. Flows are also diverted to several groundwater percolation ponds along Guadalupe Creek, the Guadalupe River and Los Gatos Creek.

\textsuperscript{16} Nuisance flows are flow events not derived from stormwater, they usually occur in the dry weather as a result of urban runoff, such as car washing.


Note: Mean daily flow for Canoas Creek at Almaden Expressway. Data from October 1, 1977 until September 30, 2008. Santa Clara Valley Water District Flood Alert Station 73. Drainage area is 18.61 square miles.

4. Flooding
Flooding can be common in Santa Clara County, with a basin-wide increase over the last 20 to 30 years in the frequency of flooding associated with increasing intensity of urbanization and an increase in the incidence of large storms.\textsuperscript{19} Engineering channel geomorphology to control floods, such as constructing levees or lining channels with concrete, has grown over this same time period. Despite efforts to provide adequate flood control, nearly 40 percent of the County’s streams, creeks and rivers are incapable of carrying flows from a “100-year flood,” with approximately 60 square miles of the 300-square mile Valley floor being flood prone.\textsuperscript{20} Over the past several decades, major floods have occurred in 1967, 1978, 1980, 1982, 1983, 1986, 1995, 1996 to 1997, and 1998.

Flood Insurance Rate Maps (FIRMs) have been prepared in conjunction with the Federal Flood Insurance Program showing areas projected to be flooded to a depth of one foot or more in the event of a “1 percent” or “100-year” flood occurrence. The project site is located within Zone D, which is an area of “undetermined, but possible, flood hazard.”\textsuperscript{21} The FIRM map currently indicates the 100-year flood event would likely be contained in Canoas Creek. However, staff at the SCVWD have stated that “Canoas Creek is not adequate to convey flood flows.”\textsuperscript{22} Thus careful planning is needed to reduce increased flow to the creek. During the January 9 to 10, 1995 storm, then considered to be a 44-year storm event, flow reportedly overtopped the banks of Canoas Creek at four locations in San Jose, none of which were at the project site. Canoas Creek was also mentioned in the 1978 SCVWD Flood Report,

\begin{itemize}
  \item \textsuperscript{21} Federal Emergency Management Agency (FEMA), 1982, Flood Insurance Rate Maps, Santa Clara County, California, Unincorporated Areas, Community Panels 06085C0263H and 06085C0264H, Effective Date May 18, 2009.
  \item \textsuperscript{22} Haggerty, C., 2010, Notice of Preparation of the Martial Cottle Park State Park General Plan/County Master Plan Draft Environmental Impact Report (DEIR), letter dated February 24, 2010 addressed to Jane Mark of the County of Santa Clara Parks and Recreation Department, page 3.
\end{itemize}
which assessed the results of the 3- to 7-year storm event in 1978, with severe damage occurring upstream of the Capitol Expressway. Canoas Creek was not mentioned in the other flood reports.\textsuperscript{23} The high percentage of impervious surface in the watershed contributes to rapid rising and falling of streamflow, which has historically resulted in flooding of the lower Guadalupe River.\textsuperscript{24}

The City of San Jose designs most storm drains to withstand a 3-year storm, with storm drains designed before 1989 designed to withstand a 10-year storm. However, the roads neighboring the project site are graded such that they are not likely to overflow into the project site (see Figure 4.10-2).

5. Groundwater

The project site is within the Santa Clara Groundwater Basin, which is underlain by three major, interconnected groundwater sub-basins: Santa Clara Valley, Coyote, and Llagas, from north to south. The geologic materials that have filled the Santa Clara Valley over the last several million years are comprised of gravels, sands, and silty sands. These types of deposits are generally very permeable (i.e., transmit water easily) and have the capability to yield large flows to wells.\textsuperscript{25} The main production unit in the Santa Clara Valley, and the area where the project site is located, is the Santa Clara sub-basin. The water-bearing formations of the Santa Clara sub-basin include non-marine deposits of unconsolidated to semi-consolidated gravel, sand, silt, and clay.

The Santa Clara Formation, the oldest such deposits, are exposed only on the west and east sides of the Santa Clara Valley, where they are composed of poorly sorted


\textsuperscript{25} Wilson, L.D. and Iwamura, T.I., 1989, Standards for the construction and destruction of wells and other deep excavations in Santa Clara County. Santa Clara Valley Water District, SCVWD-IM890, various pages.
An area inundated by 100-year flooding for which no Base Flood Elevations have been determined.

deposits ranging in grain size from boulders to silt. Well logs indicate that permeability increases from west to east and that in the central part of the valley permeability and grain size decrease with depth.\footnote{California Department of Water Resources, 2004, Evaluation of groundwater resources South San Francisco Bay Volume III Northern Santa Clara County Area: Bulletin 118-1.}

Younger, Pleistocene to Holocene, alluvium is the most important water-bearing unit in the Santa Clara sub-basin. The permeability of the valley alluvium is generally high and principally all large production wells derive their water from it. Comprised generally of unconsolidated gravel, sand, silt, and clay, the alluvium was deposited principally as a series of convergent alluvial fans. It becomes progressively finer-grained at the central portions of the valley, such as beneath the project site. A confined zone is present north of Highway 280, where overlain by a clay layer (referred to as Bay Mud and Old Bay Mud) of low permeability.\footnote{California Department of Water Resources, 2004, Evaluation of groundwater resources South San Francisco Bay Volume III Northern Santa Clara County Area: Bulletin 118-1.} The southern portion of the sub-basin is generally unconfined and contains no thick clay layers. The project site overlies the southern portion of this sub-basin, and therefore the Bay Mud cap is not present.

Groundwater supplies nearly half of Santa Clara County’s total water supply. In 2003, approximately 146,900 acre-feet of groundwater were extracted for beneficial use, with almost 70 percent pumped from the Santa Clara sub-basin.\footnote{Santa Clara Valley Water District, 2005, Groundwater Conditions 2002/2003.} In and adjoining the low foothills at the edge of the Santa Clara Valley sub-basin, the geologic materials that compose the aquifers are exposed at the ground surface. These zones are collectively known as the “forebay” of the aquifer. In these exposed areas, rainfall, stream flows, and other surface water are able to infiltrate and to seep into the aquifer.\footnote{Iwamura, T.I., 1995, Hydrogeology of the Santa Clara and Coyote valleys groundwater basins, California, in Sangines, E. M., Andersen, D. W., and Buising, A. V., eds.,} The District actively promotes recharge to the aquifer using local and imported water.
water applied to about 390 acres of off-stream percolation ponds located throughout the County. In 2003, about 118,100 acre-feet of water was recharged through artificial recharge operations. Seasonal dams are also used to encourage in-stream recharge.

Recharge ameliorates problems related to land subsidence in addition to helping to maintain groundwater supplies. Subsidence is a broad sagging of the land surface over many miles as a result of decreased water pressure in the underlying aquifers. It is a phenomenon that has occurred extensively in the northernmost Santa Clara sub-basin, well north of the Park, during the 20th century due to over pumping of the aquifer. Generally, the subsidence monitoring the SCVWD performs indicates that land subsidence in the Santa Clara Valley sub-basin is minimized by their proactive groundwater management activities; with the 2003 water levels approximately 63 feet above the likely subsidence threshold and with groundwater storage increasing during recent years. The project site has no meaningful potential for subsidence since the area is under active recharge and the area is composed of fine grained sediments which are less prone to subsidence.

Groundwater generally exists at depths below the streambeds, except in the lower courses of a few of the larger streams. In 2003, groundwater elevations basin-wide were, on average, 28 feet below the 89-year historical recorded maximum levels and over 200 feet above the minimum groundwater levels on record. The minimum

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Recent geologic studies in the San Francisco Bay area: Pacific Section SEPM (Society for Sedimentary Geology) Book 76, pages 173 to 192.

31 Reymers V and Hemmeter T., 2001, Santa Clara Valley Water District Groundwater Management Plan Santa Clara Valley Water District, San Jose, CA
34 Foster, E. and Hecht, B., 1999, Regional setting for the SCVURPP watershed planning process. A consulting report prepared by Balance Hydrologics, Inc. for Santa Clara Valley URPPP.
35 Part of a five-year period with normal or near normal rainfall.
groundwater level occurred in the 1960s prior to the onset of the current import and recharge programs. The most recent groundwater conditions report indicates that groundwater levels have changed between August 2004 and 2009, showing a positive 18.4 feet elevation change in southern San Jose near the project site and a negative 18.4 feet in Campbell.\textsuperscript{36} Historically, depth to groundwater has seen drastic shifts. Drawdown was caused by over pumping the aquifer and rebound has occurred due to the extensive measures taken by SCVWD in recharging the aquifer with in-basin and out-of-basin waters (see Figure 4.10-3).

Depth to water for the agriculture well at the Park (W-5) was 25.22 feet below ground surface (bgs) on September 22, 2009, the third consecutive year of drought. Based on environmental reports prepared for properties in the vicinity of the site, groundwater had previously been measured at depths ranging between approximately 12 to 22 feet bgs.\textsuperscript{37} A minimum depth to groundwater map was generated using the SCVWD website. At this site the user chooses a geographical area and a contour map is then compiled using shallow groundwater measurements observed during leaking underground storage tank investigations from 1999 to 2009 (see Figure 4.10-4). Groundwater flow direction in the vicinity of the project site is variable based on information obtained from three neighboring properties.\textsuperscript{38} Groundwater at the project site will generally follow the regional pattern, which, most of the year, is north to north-west, towards the San Francisco Bay. Historically the basin-wide groundwater flow system started along the mountain fronts and flowed toward the center of the basin and toward southern San Francisco Bay. Much of the predevelopment flow paths have been modified by pumping centers characterized by groups of wells that have resulted in sub-regional cones of depression and related flow paths.

Scientists at the USGS created a Santa Clara Valley Regional groundwater and surface-water flow model in 2004, which summarizes the regional aquifer properties

\textsuperscript{36} Santa Clara Valley Water District, 2009, Groundwater Conditions 2009.
\textsuperscript{37} Ninyo & Moore Geotechnical and Environmental Sciences Consultants, 2003, Phase I Environmental Site Assessment for the Lester Property – 5285 Snell Avenue.
\textsuperscript{38} Ninyo & Moore Geotechnical and Environmental Sciences Consultants, 2003, Phase I Environmental Site Assessment for the Lester Property – 5285 Snell Avenue.
Surface Elevation = 104.7 ft

Note: Hydrograph for the Santa Clara Valley Subbasin Index Well (07S01E07R013), near San Jose, California.

Source: SCVWD, 2007; Balance Hydrologics.
Figure 4.10-4

Project Site Depth to Water

Approximate Location of Groundwater Monitoring Program Wells

Depth to 1st water:
Feet below ground surface
- 0 to 10 ft.
- 10 to 20 ft.
- 20 to 30 ft.
- 30 to 50 ft.
- 50 to 100 ft.
- Greater than 100 ft.

Note: Minimum depth recorded of shallow groundwater near Martial Cottle Park, San Jose, Santa Clara County, California.

Source: SCVWD, 2009; Balance Hydrologics.
within the Santa Clara sub-basin. These properties will assist in estimating the drawdown effects of pumping the well at the Park. The properties of the unconfined upper-aquifer (layer 3 in the model), are as follows: horizontal hydraulic conductivity is 380 feet per day, vertical hydraulic conductivity is $5.0 \times 10^{-3}$ feet per day, and aquifer specific storage is $2.0 \times 10^{-5}$ per foot. The storage coefficient (or storativity) can be calculated from specific storage by multiplying by the aquifer thickness, which, on average is 600 feet, yielding a storage coefficient of 0.012. Values for unconfined aquifers typically range from 0.01 to 0.30. The upper-aquifer extends to about 300 feet bgs at the project site, indicating that the well, which is 250 feet deep, at the project site, is in the upper-aquifer. Transmissivity values based on modeling indicate a maximum average value of 392,807 gallons per day (gpd) per foot near the project site and a more realistic value accounting for effects of faults and historic water levels of 27,675 gpd per foot, a value close to the calculated value from a nearby well.

Aquifer properties measured by Balance Hydrologics in 1996 in Great Oaks Water Company wells, located northeast of U.S. Highway 101 and northwest of Bernal Road in the City of San Jose, yielded specific capacity (Q/S) ranging from approxi-

---


40 The unconfined upper-aquifer is not to be confused with the Shallow Aquifer which is the confined upper-aquifer, and not to be confused with the distinction of upper and lower aquifer of Iwamura, 1995 which generalized the Santa Clara Valley into two aquifer units verses the Hanson et. al., 2004, model that divides the aquifer into 6 units.

41 Transmissivity is a measure of the ability of an aquifer to transmit water. It represents the volume of water that can move through section of cross section of aquifer 1 foot wide under a gradient of 1. The conventional units are gallons per day/ft.


44 Specific Capacity is a measure of the ratio of discharge rate to drawdown. The conventional units are in gallon per minute per foot of drawdown (gpm/ft).
mately 50 to 100 gallons per minute (gal/min) per foot. Analysis of the data from the pumping tests reveals the composite aquifers in the area of the well to be highly transmissive with a composite transmissivity of 112,300 gpd per feet. Analysis of the step-drawdown data suggests that the some of the aquifer zones (water revealed in three prominent water-bearing zones, 50 to 90 feet, 105 to 135 feet and 170 to 230 feet) are more transmissive than others resulting in higher specific capacity values at lower discharge rates. Municipal and irrigation wells range widely in yield with maximum values of 1,650 gal/min.

6. Water Quality
   a. Surface Water Quality
   Headwater streams are supplied primarily by surface runoff during the wet season. However, during the dry season, springs (if present) can be important contributors to water quality. The reservoirs and other impoundments operated in many watersheds capture runoff from local drainages and are often used to store imported waters. The relative proportion of each source is dependent on management decisions by SCVWD, and the quality of water in streams downstream of reservoirs can also vary depending on how the reservoirs are operated.

   Surface water quality problems typically result from human activities. The SCVURPPP has identified seven pollutants of regional concern in urban runoff: copper, nickel, mercury, pesticides, PCBs, dioxin compounds, and sediment. Additional potential pollutants were identified in the Drinking Water Source Assessment for Anderson and Calero Reservoirs: pathogens and nutrients from residential wastewater systems and grazing activities, fuel contaminants from recreation and leaking underground storage tanks, and volatile organic compounds (VOCs) from industrial uses. Other watersheds within the SCVURPPP likely have similar risks. It should


be noted that most reservoirs are located upstream of the majority of contaminant sources, particularly urban and residential development.47

One of the major water quality issues in the Guadalupe River Watershed is high naturally-occurring background levels of mercury as well as legacy mercury pollution. The New Almaden mercury-mining district, which was active from 1846 to 1975, released mercury into the environment. Mercury is strongly associated with particulates and therefore is transported with sediments to streams and eventually to reservoirs. Once in the reservoir, the relatively insoluble particulate mercury sulfide undergoes biogeochemical reactions and is transformed to the bioavailable methylmercury. These reactions occur in reduced conditions which develop during the summer when warm air causes the reservoir to stratify, leaving oxygen depleted water at the bottom of the reservoir. Reservoir releases can have higher methylmercury concentrations than average reservoir concentrations because the outlet pipes pull from zones low in the water column where oxygen concentrations are lower.

Water temperatures varied between 9.5 to 21 degrees Celsius between 2002 and 2008 at two locations along the Guadalupe River in San Jose, with an average value around 14 degrees Celsius. Suspended sediment was also analyzed in this data set; maximum concentrations reached 842 milligrams per liter (mg/L) with an average concentration near 100 mg/L, a range somewhat lower than that typical of the Santa Cruz Mountains streams.

Canoas Creek was sampled, during low flow conditions, on September 22, 2009 by Balance Hydrologics for water quality and sent to a State-certified analytical facility. Water quality testing results are shown in Table 4.10-3. Field specific conductance measured 631 microsiemens per centimeter (μS/cm) at 16.3 degrees C. Both total coliforms and E. coli were detectable in the sample, likely from waterfowl in the creek or from other sources typical of urban streams. Otherwise, overall water quality is favorable. Previous work by Ninyo and Moore, 2004, found water at Canoas

47 Mercury and nickel are enriched in the former New Almaden mining area at the headwaters of the Guadalupe River, partially localizing these hazards.
### Table 4.10-3: Project Site Surface Water and Groundwater Water Quality Analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Reporting Limit</th>
<th>Objectives</th>
<th>Groundwater</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Title 22 MCL&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Irrigation Water&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Canoas Creek W-1&lt;sup&gt;b&lt;/sup&gt;, W-3</td>
</tr>
<tr>
<td><strong>General Mineral</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH (lab)</td>
<td>pH Units</td>
<td>0.1</td>
<td>--</td>
<td>8.6</td>
</tr>
<tr>
<td>Specific conductance (25°C)</td>
<td>umhos/cm</td>
<td>1</td>
<td>1,600</td>
<td>750&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Carbonate (as CO&lt;sub&gt;3&lt;/sub&gt;)</td>
<td>mg/L</td>
<td>1.7</td>
<td>--</td>
<td>11</td>
</tr>
<tr>
<td>Bicarbonate (as HCO&lt;sub&gt;3&lt;/sub&gt;)</td>
<td>mg/L</td>
<td>1.7</td>
<td>--</td>
<td>270</td>
</tr>
<tr>
<td>Total Alkalinity (as CaCO&lt;sub&gt;3&lt;/sub&gt;)</td>
<td>mg/L</td>
<td>1.7</td>
<td>--</td>
<td>240</td>
</tr>
<tr>
<td>Hardness (as CaCO&lt;sub&gt;3&lt;/sub&gt;)</td>
<td>mg/L</td>
<td>5</td>
<td>--</td>
<td>280</td>
</tr>
<tr>
<td>Total dissolved solids (TDS)</td>
<td>mg/L</td>
<td>20</td>
<td>1,000</td>
<td>490</td>
</tr>
<tr>
<td>Nitrate (as NO&lt;sub&gt;3&lt;/sub&gt;)</td>
<td>mg/L</td>
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<td>45</td>
<td>ND</td>
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<tr>
<td>Chloride (Cl)</td>
<td>mg/L</td>
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<td>500</td>
<td>85</td>
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<tr>
<td>Sulfate (SO&lt;sub&gt;4&lt;/sub&gt;)</td>
<td>mg/L</td>
<td>1</td>
<td>500</td>
<td>66</td>
</tr>
<tr>
<td>Fluoride (F)</td>
<td>mg/L</td>
<td>0.1</td>
<td>2</td>
<td>1&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Calcium (Ca)</td>
<td>mg/L</td>
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<td>--</td>
<td>35</td>
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<tr>
<td>Magnesium (Mg)</td>
<td>mg/L</td>
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<td>--</td>
<td>47</td>
</tr>
<tr>
<td>Potassium (K)</td>
<td>mg/L</td>
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<td>--</td>
<td>9.4</td>
</tr>
<tr>
<td>Sodium (Na)</td>
<td>mg/L</td>
<td>10</td>
<td>--</td>
<td>59</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>ug/L</td>
<td>50</td>
<td>300</td>
<td>5,000&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup> Value from Title 22 MCLs for irrigation wells.

<sup>b</sup> Value from the CA State Water Resources Control Board.

4.10-27
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Reporting Limit</th>
<th>Title 22 MCL</th>
<th>Irrigation Water</th>
<th>Canoas Creek W-1</th>
<th>W-3</th>
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<tbody>
<tr>
<td>Manganese (Mn)</td>
<td>ug/L</td>
<td>20</td>
<td>50</td>
<td>200</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Turbidity</td>
<td>NTU</td>
<td>0.1</td>
<td>--</td>
<td>10</td>
<td>3</td>
<td>4.3</td>
</tr>
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</table>

**Inorganics**

<table>
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<th>Parameter</th>
<th>Units</th>
<th>Reporting Limit</th>
<th>Title 22 MCL</th>
<th>Irrigation Water</th>
<th>Canoas Creek W-1</th>
<th>W-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum (Al)</td>
<td>µg/L</td>
<td>50</td>
<td>1,000</td>
<td>5,000</td>
<td>20,000</td>
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</tr>
<tr>
<td>Antimony</td>
<td>µg/L</td>
<td>6</td>
<td>6</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<tr>
<td>Arsenic (As)</td>
<td>µg/L</td>
<td>2</td>
<td>10</td>
<td>100</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>µg/L</td>
<td>100</td>
<td>1,000</td>
<td>ND</td>
<td>ND</td>
<td>230</td>
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<tr>
<td>Beryllium</td>
<td>µg/L</td>
<td>1</td>
<td>4</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Boron (B)</td>
<td>µg/L</td>
<td>100</td>
<td>--</td>
<td>800</td>
<td>2,000</td>
<td>190</td>
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<tr>
<td>Cadmium (Cd)</td>
<td>µg/L</td>
<td>1</td>
<td>5</td>
<td>10</td>
<td>50</td>
<td>ND</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>µg/L</td>
<td>1</td>
<td>50</td>
<td>100</td>
<td>1,000</td>
<td>3.5</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>ug/L</td>
<td>50</td>
<td>1,000</td>
<td>200</td>
<td>5,000</td>
<td>ND</td>
</tr>
<tr>
<td>Cyanide (CN)</td>
<td>µg/L</td>
<td>100</td>
<td>200</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>µg/L</td>
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<td>--</td>
<td>5,000</td>
<td>10,000</td>
<td>ND</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>µg/L</td>
<td>1</td>
<td>2</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<tr>
<td>Nickel (Ni)</td>
<td>µg/L</td>
<td>10</td>
<td>100</td>
<td>200</td>
<td>2,000</td>
<td>ND</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>µg/L</td>
<td>5</td>
<td>50</td>
<td>20</td>
<td>20</td>
<td>ND</td>
</tr>
<tr>
<td>Silver (Ag)</td>
<td>µg/L</td>
<td>10</td>
<td>100</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Thallium (Th)</td>
<td>µg/L</td>
<td>1</td>
<td>2</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Zinc (Z)</td>
<td>ug/L</td>
<td>50</td>
<td>5,000</td>
<td>2,000</td>
<td>10,000</td>
<td>77</td>
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Table 4.10-3 Project Site Surface Water and Groundwater Water Quality Analysis (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Groundwater</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Title 22 MCL&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Irrigation Water&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Canoas Creek</td>
</tr>
<tr>
<td>Bacteria</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. coli</td>
<td></td>
<td>present</td>
<td>absent</td>
<td>absent</td>
</tr>
<tr>
<td>Total coliforms</td>
<td></td>
<td>present</td>
<td>present</td>
<td>present</td>
</tr>
</tbody>
</table>

Notes: Observers included Jennie Munster, Bill Grimes, and Dave G. Irrigation standards from the Central Coast Regional Water Quality Control Board Basin Plan, 2006. ND = not detected. "- -" = not applicable.

<sup>a</sup> MCL = Title 22 Maximum Contaminant Level as of Sept. 2009.
<sup>b</sup> W-1 and W-3 refer to two wells on the Life Estate, as referred to in the Martial Cottle Park Final Resource Inventory report prepared in July 2009 by Wallace, Roberts and Todd, LSA Associates; and Design, Community & Environment.
<sup>c</sup> For water used continuously on all soil.
<sup>d</sup> For use up to 20 years on fine textured soils of pH 6 to 8.5.


Creek to be below detection limits for oil and grease, arsenic, volatile organic compounds (VOCs), and pesticides.<sup>48</sup>

b. Groundwater Quality
Groundwater in the Santa Clara Valley aquifer is of good quality, is relatively uniform, and is currently considered suitable for most beneficial uses.<sup>49</sup> Drinking water standards are met at public water supply wells without the use of treatment methods. Groundwater quality and chemistry is influenced by source waters (infiltration), the geologic substrate of the aquifer, interactions between adjacent groundwater sources, and management activities, including recharge of imported waters from the Delta. Average total dissolved solids (TDS) concentration ranges from 366 to 396 mg/L in the principal (confined) zone of the Santa Clara Valley aquifer and is high in calcium.

<sup>48</sup> Ninyo & Moore Geotechnical and Environmental Sciences Consultants, 2004, Phase II Environmental Site Assessment for the Lester Property – 5285 Snell Avenue.
<sup>49</sup> Reymers V and Hemmeter T., 2001, Santa Clara Valley Water District Groundwater Management Plan Santa Clara Valley Water District, San Jose, CA.
carbonate. Groundwater near the recharge area (forebay) has a higher magnesium concentration due to the stronger influence of serpentine bedrock. As water spends more time in the aquifer and has longer contact time with the clays in the aquitard, magnesium, and other cations are replaced with sodium. Water quality problems typically result from human activities. Saltwater intrusion, resulting from over withdrawals and historical land subsidence, contributes salts to portions of the Santa Clara Valley aquifer. Although land subsidence decreased in 1969, the water quality impacts of over-withdrawal are still evident in the San Francisco Bay front area. Portions of the Santa Clara Valley sub-basin are somewhat high in terms of total mineral salt content. Application of fertilizers can introduce nitrate to groundwater. Nitrate levels in the principal zone of the Santa Clara Valley aquifer ranged from 0 to 18 mg/L of nitrate (NO₃⁻) between 1997 and 2000, whereas nitrate levels in the Coyote and Llagas sub-basins are usually higher and can exceed the drinking water standard of 45 mg/L. At the basin-management scale, nitrate in the Llagas sub-basin (where agriculture has been identified as a primary source) has been an issue for 40 years or more, and is of growing concern to SCVWD staff. Because nitrate is generally not filtered out by soil particles where soils are sandy and gravelly, reducing further loading of nitrate is the primary means of protecting groundwater and has been identified as an objective of the SCVWD Nitrate Management Program. The silty soils at the project site are much less prone to allowing deep percolation of applied nitrogen than the sandier substrate of the Llagas sub-basin and other areas with historically high groundwater nitrites. A summary of the County of Santa Clara groundwater quality data is presented in Table 4.10-4.

Typical urban and residential pollutants such as metals and oil and grease can impact groundwater. However, infiltration through silt- and clay-rich soils has been effective at removing these pollutants such that groundwater meets drinking water standards. Although spills and poor management of industrial chemicals and wastes can pose a potential “point-source” threat to groundwater quality, such sources are not reported in the immediate vicinity of the park. Boron, a naturally occurring

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50 Reymers V and Hemmeter T., 2001, Santa Clara Valley Water District Groundwater Management Plan Santa Clara Valley Water District, San Jose, CA
## Table 4.10-4 Summary of the County of Santa Clara Groundwater Water Quality Data (1997 to 2000)

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Principal Aquifer Zone</th>
<th>Upper Aquifer Zone</th>
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<tbody>
<tr>
<td>Chloride (mg/l)</td>
<td>40 – 45</td>
<td>92 – 117</td>
</tr>
<tr>
<td>Sulfate (mg/l)</td>
<td>37 – 41</td>
<td>106 – 237</td>
</tr>
<tr>
<td>Nitrate (mg/l)</td>
<td>15 – 18</td>
<td>0.002 – 4</td>
</tr>
<tr>
<td>Total Dissolved Solids (mg/L)</td>
<td>366 – 396</td>
<td>733 – 1210</td>
</tr>
<tr>
<td>Sodium Adsorption Ratio</td>
<td>0.89 - 1.26</td>
<td>1.23 - 3.84</td>
</tr>
<tr>
<td>Electrical Conductance (uS/cm at 25 deg C)</td>
<td>596 - 650</td>
<td>1090 – 1590</td>
</tr>
<tr>
<td>Aluminum (ug/l)</td>
<td>6 - 18</td>
<td>23 – 97</td>
</tr>
<tr>
<td>Arsenic (ug/l)</td>
<td>0.7- 1.2</td>
<td>1.2 – 3.7</td>
</tr>
<tr>
<td>Barium (ug/l)</td>
<td>141 - 161</td>
<td>60 – 220</td>
</tr>
<tr>
<td>Boron (ug/l)</td>
<td>115 - 150</td>
<td>200 – 523</td>
</tr>
<tr>
<td>Cadmium (ug/l)</td>
<td>&lt;1</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Chromium (ug/l)</td>
<td>6 – 8</td>
<td>0.5 – 1.8</td>
</tr>
<tr>
<td>Copper (ug/l)</td>
<td>1.9 – 4.4</td>
<td>0.3 – 1</td>
</tr>
<tr>
<td>Fluoride (mg/l)</td>
<td>0.13 – 0.16</td>
<td>0.15 – 0.3</td>
</tr>
<tr>
<td>Iron (ug/l)</td>
<td>10 – 38</td>
<td>40 – 160</td>
</tr>
<tr>
<td>Lead (ug/l)</td>
<td>0.2 – 1.1</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Manganese (ug/l)</td>
<td>.15 – 1.5</td>
<td>120 – 769</td>
</tr>
<tr>
<td>Mercury (ug/l)</td>
<td>&lt;1</td>
<td>&lt;0.2</td>
</tr>
<tr>
<td>Nickel (ug/l)</td>
<td>1.8 – 3.4</td>
<td>4 – 10</td>
</tr>
<tr>
<td>Selenium (ug/l)</td>
<td>2.5 – 3.8</td>
<td>0.4 – 2</td>
</tr>
<tr>
<td>Silver (ug/l)</td>
<td>&lt;5</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Zinc (ug/l)</td>
<td>3 – 8</td>
<td>3 - 13</td>
</tr>
</tbody>
</table>

inorganic constituent found in groundwater, but harmful for agricultural water quality at high levels, has exceeded 0.2 mg/L in a handful of wells operated by SCVWD.

Analyses by water companies within the Santa Clara Valley Water District confirm the high quality of water within the basin. Analysis of water produced at the Great Oaks Water Company reveal the water to be of excellent quality with total dissolved solids concentration of 410 mg/L. The water is of a magnesium-bicarbonate chemical character, consistent with its location proximate to a spreading basin. The water meets drinking water standards for all constituents included in the analytical program. San Jose Water Company manages over 100 groundwater wells that draw water from the Santa Clara Valley Groundwater Basin near and neighboring the park. These waters are routinely analyzed for over 200 possible contaminants. The 2008 Annual Water Quality Report indicates that this water is of good quality with trace elements below maximum contaminant levels, total dissolved solids ranging from 196 to 600 mg/L, chloride from 14 to 110 mg/L, sodium from 16 to 52 mg/L, and sulfate from 18 to 85 mg/L.

A search of data near the project site also confirms the good water quality locally. Three wells located within a 2-mile radius of the project site monitored by the USGS and analyzed seven times from 2002 through 2008 indicate water quality with total dissolved solids averaging 385 mg/L. Average nitrate values were 6.5 mg/L NO₃, with a maximum value of 10.8 mg/L. The five wells operated by the San Jose Water Company within 1 mile of the project site measured total dissolved solids between 400 to 561 mg/L from 1983 through 1997 and nitrate values between 14 to 25 mg/L NO₃. Some insecticides were measured within the wells at low concentrations, such as Hexachlorocyclopentadiene at a maximum value of 10 ug/L and Methoxychlor at maximum value of 5 ug/L.

Since a sample could not be collected from the agricultural well on the project site due to a broken pump piece, samples were collected from two wells on the Life Estate by staff from County of Santa Clara Parks and Recreation Department and the

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site farmer. Bacteria (total coliforms) were present and E. coli was absent, though sampling techniques may have contaminated the samples. Samples had to be collected at the end of aluminum piping and hoses that had been in the dirt and may have had sources of total coliform contamination. Water quality from the two wells was similar and consistent with regional and local values. Previous work by Ninyo and Moore, 2004, found the on-site wells (W1-W5) were under detection limits for oil and grease, arsenic, VOCs and pesticides\(^2\) (see Table 4.10-3).

7. Water Demand
Water use is related to the land use of the property. The project is part of the historical agricultural heritage in the Santa Clara Valley. Distributing agricultural products remains a fundamental element of the region’s economy and employment particularly to the economy of the South County area, and the cities of Morgan Hill and Gilroy. The project site has been owned and farmed by the Cottle and Lester families for almost 150 years. In the mid-1800s the property supported grain, row crops, and cattle. Agricultural operations over the generations have included a dairy operation, growing grain, pasturage for cattle and horses, a family orchard, row crops, and milling cattle feed. These previous land use activities likely required up to 4.4 acre-feet per acre per year. The current land use of fallow agricultural land with non-native plants and scattered oak trees does not consume water beyond incident rainfall. Within this region, nursery crops, mushrooms, cut flowers, fruits, nuts, berries, vegetables and grain crops that are grown typically do not require more than 3 acre-feet per acre per year.

The on-site well is currently not being used, but was the primary water supply for the highly productive agricultural land uses in the past.

C. Standards of Significance

Hydrology impacts associated with the Plan would be considered significant if the Plan would:

\(^2\) Ninyo & Moore Geotechnical and Environmental Sciences Consultants, 2004, Phase II Environmental Site Assessment for the Lester Property – 5285 Snell Avenue.
1. Violate any water quality standards or waste discharge requirements.

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.

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 on- or off-site.

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 on- or off-site.

5. Create or contribute increased impervious surfaces and associated runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

6. Degrade surface or groundwater quality or public water supply (including marine, fresh and wetland waters).

7. Place a structure 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.

8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

9. 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.

10. Be located in an area of special water quality concern (e.g., Los Gatos or Guadalupe Watershed).

11. Result in use of well water previously contaminated by nitrates, mercury, asbestos, etc. existing in the groundwater supply.

12. Result in a septic field being constructed on soil with severe septic drain field limitations or where a high water table extends close to the natural land surface.
13. Result in a septic field being located within 50 feet of a drainage swale; 100 feet of any well, water course, or water body or 200 feet of a reservoir at capacity.


15. Result in extensions of a sewer trunk line with capacity to serve new development.

16. Result in significant changes to receiving water quality during or following construction requiring an NPDES permit for construction. [Does it disturb one (1) acre or more?]

17. For projects that are a tributary to an already impaired water body, result in an increase in any existing pollutants.

18. Substantially change the direction, rate of flow, quantity, or quality of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations.

19. Interfere substantially with groundwater recharge or reduce the amount of groundwater otherwise available for public water supplies.

20. Involve a surface water body, natural drainage channel, streambed, or water course such as to alter the amount, location, course, or flow of its waters.

D. Impact Discussion

1. Violation of Water Quality Standards or Waste Discharge Requirements
Impacts related to water quality standards and waste discharge requirements would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

The project would not include the creation of point discharges (for example, a wastewater treatment facility). Therefore, the project would not violate waste discharge water quality standards or requirements, and a less-than-significant impact would result.
For a discussion of construction related water quality impacts see Standards of Significance #17 and #18. For a discussion of stormwater quality related impacts see Standards of Significance #5 and #10. For a discussion of water quality impacts from farming practices see Standards of Significance #5, #6, and #11.

2. Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge

Groundwater supply and groundwater recharge impacts would be the same for Phase 1 and subsequent phases. All components of groundwater use for agricultural purposes would be implemented during the project-level component. As such, project-level and program-level components are not distinguished below.

Groundwater supplies would be utilized for agricultural production at the project site using an existing on-site agricultural well, which previously supplied agricultural irrigation on-site. Part of Phase 1 of the project is to repair the well since a component of the well’s pump is currently inoperable. The agricultural demand of the project is expected to result in a water demand of 430 acre feet per year (AFY).53 Groundwater would be the sole source of water for the commercial agricultural areas, and municipal water would be the water source for the Parks and Recreation and Cooperative Management Zones. The project proposes sustainable farming practices in order to reduce impacts to water and other resources, conditions that would be outlined in the conditions of the agricultural lease agreements. To lessen the demand on the well, the proposed Plan also addresses the potential for on-site water recycling and reuse. Section 13550 (Article 7) of the California Water Code outlines the requirements for use of waste water for irrigation where recycled water lines are within close proximity to a project site. At this time, no recycled water lines are within a feasible distance for use at the project site. The project would prepare for potential connection in the future, however, by pre-installing infrastructure needed to appropriately distribute recycled water within the site if or when a proximal supply line is constructed.

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53 Assumes a demand of 3 acre-feet per acre per year for 143 acres of land used for agricultural production. This is in agreement with regional values and accounts for loss due to evapotranspiration.
In compliance with California Water Code Section 10910, a WSA was prepared for the project and approved by the County Board of Supervisors on August 24, 2010. Sufficient groundwater supplies are available to support conservatively-high estimates of agricultural irrigation until the year 2025 for a “normal year” scenario and 2030 for a “multi-year drought” scenario. Increases in groundwater demand after 2025 would not induce groundwater shortages during planning periods or scenarios outside of those already identified in SCVWD’s 2005 Urban Water Management Plan, and the increase is small relative total basin groundwater demand. The WSA also concluded that sufficient water is available to support the municipal water uses at the project site (through the San Jose Water Company) through at least 2030 (the end of the required planning period).

Since groundwater is a major source of potable water in Santa Clara County, and because there are groundwater-supply wells within the vicinity of the project site, resumed pumping of the on-site well would need to be analyzed to evaluate the impact of pumping on water levels and the continued availability of water in neighboring wells. The Santa Clara Valley Water District indicated that five wells were active on the property in 2000 (the baseline used for the 2005 Urban Water Management Planning (UWMP) analysis), and approximately 52 acre-feet of water were pumped from those wells that year. It is probable that all of this water was pumped from wells within the Life Estate area, and that the agricultural supply well has been predominantly inactive since at least 2000. Prior records of pumping at the site are not available, but it is likely that the agricultural supply well has been predominantly dormant since the 1980s (prior to the 1987 to 1992 drought).

To evaluate the impact of pumping the on-site well, this analysis evaluates, under multiple scenarios of different hydrologic properties typical of the local aquifer and assuming water will be drawn continuously for 97 days to meet the 430 AFY demand, the drawdown effects of pumping the on-site well at 1,000 gal/min, which is the current production rate of the well. This calculates the maximum drawdown.

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55 E-mail correspondence from Colleen Haggerty, SCVWD Engineer, June 24, 2010
56 Refer to Section B.5, Existing Conditions, Groundwater section.
effect as water will likely not be continuously pumped but likely drawn upon for
short durations during irrigation or pumped and stored for later use.

The drawdown predictions are sensitive to the transmissivity and storativity values
used, with drawdown variable by as much as a foot. The nearest wells are those at
the Life Estate, which are 0.5 to 0.6 miles east of the on-site well and drawn upon for
domestic and agricultural uses. These wells would experience a maximum of 2.2 feet
drawdown, if pumped at 1,000 gal/min continuously for 97 days (for a total of 430
AFY). The nearest water-supply wells, besides the private wells at the Life Estate, are
those operated by the Great Oaks Water Company which are about 2 miles from the
on-site well.\footnote{Personal communication, November 13, 2009, Bobby Dartez, Great Oaks Water
Company.} At most, these wells would experience a drawdown of 1.0 feet if the
on-site well is similarly pumped for 97 days at a rate of 1,000 gal/min. The wells
within 2 miles of the project site and operated by the San Jose Water Company are
no longer in use.\footnote{Personal communication, November 13, 2009, Pam Wessling, San Jose Water
Company.} At a distance of 6 miles from the on-site well, no effect of pumping
would be observed (see Figure 4.10-5).

The project would not alter groundwater recharge, as 93 percent of the proposed
project would be pervious\footnote{Pervious acreage based on land use from the Preferred Alternative Land Use Ma-
trix dated 8-21-09.}, similar to existing conditions, and most runoff from
impervious areas is expected to infiltrate on-site. Additionally, depending on crop
type and style of irrigation, some of the water drawn from the local aquifer and ap-
plied to agriculture as irrigation would be returned to the groundwater aquifer.\footnote{The Martial Cottle WSA incorporates an estimate of this return flow from agricul-
tural irrigation into the groundwater supply/demand assessment. Please see Appendix G of
this Draft EIR for details.}

This hydrologic analysis indicates that pumping the on-site well would not result in a
significant drawdown, and pumping for short durations could minimize drawdown
effects. Also, the demand of the well would be alleviated if water recycling and reuse
Figure 4.10-5  Drawdown Calculated Plot
options were implemented. Groundwater elevations can range more than 10 feet on an annual basis and historically elevations can range much greater than this due to climatic conditions and effects of subsidence and pumping.\textsuperscript{61} Groundwater elevations, the depth of water at and near the project site, and the findings of a maximum of 2.2 feet of drawdown, indicate that impacts would be less than significant.

3. **Substantial Alteration of the Existing Drainage Pattern of the Site or Area in a Manner Which Would Result in Substantial Erosion or Siltation On- or Off-Site**

Impacts related to altering the existing drainage patterns of the project site would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below. Land development can adversely affect flow patterns from a site by increasing the impervious area, decreasing natural vegetation, changing grading and soil compaction, and creating new drainage facilities thereby possibly increasing erosion or siltation to nearby stream channels. The development of the project would not cause significant changes in the existing flow patterns as only approximately 5 percent more impervious surface will be created by implementing the project.\textsuperscript{62} Since this 5 percent increase would be more than 1 acre of impervious surface the project would be required to observe the Santa Clara NPDES permit issued by the RWQCB and would therefore be subject to provisions within the Santa Clara Hydromodification Management Plan (HMP).

The proposed project includes standard hydromodification controls such as planning buffer zones and planting native vegetation throughout the site. Further controls may be required through implementation of the HMP. Compliance with the NPDES permit and the HMP would reduce the impact to a less-than-significant level.

For a more detailed discussion of Best Management Practices see discussion under Standard of Significance #5. For construction related sedimentation impacts see Standard of Significance #18.


\textsuperscript{62} Pervious acreage based on calculations conducted by Design, Community & Environment, 2010.
4. Substantial Alteration of the Existing Drainage Pattern of the Site or Area or Substantial Increase in the Rate or Amount of Surface Runoff in a Manner Which Would Result in Flooding

Impacts related to altering the existing drainage patterns of the project site would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below. The seasonal floodplain wetland is proposed at the program-level.

The proposed project would add roughly 2.3 acres of buildings and 10.6 acres of paved roadways, parking and trails, which amounts to an increase in impervious area of 12.9 acres, or an approximately 5 percent increase in impervious surfaces.\textsuperscript{63} Runoff from the site drains towards the concrete lined channel of Canoas Creek. Mean daily flow in Canoas Creek at the Almaden Expressway gage rarely exceeds 400 cubic feet per second (cfs). The amount of additional runoff generated from the project during the 2- to 100-year rain events would be between 2 and 4 cfs, which is less than 1 percent of the high flows in Canoas Creek (see Table 4.10-5 and Figure 4.10-1). This additional runoff would not be sufficient to result in flooding as the concrete channel of Canoas Creek is designed to convey 1,600 cfs at the downstream end of the altered channel, where it enters Guadalupe River.\textsuperscript{64} Additionally, runoff at the project site would not directly enter Canoas Creek through stormwater drains or pipes. In order to minimize runoff to Canoas Creek, and thus erosion of the banks, overland flow should be avoided and stormwater should first be directed through buffer zones, permeable pavement, and other BMPs to increase detention, attenuate peak flows, and further decrease impacts to Canoas Creek. The seasonal wetland proposed by the project is planned for the floodplain so that it would not alter flows in Canoas Creek or the downstream protection that the existing floodplain currently provides. In fact, the floodplain wetland would act as extra detention from runoff on-site to reduce flooding.

\textsuperscript{63} Impervious surface area calculated by Design, Community & Environment, 2010.

\textsuperscript{64} Devin Mody, SCVWD, personal communication with Balance Hydrologics, March 2010.
<table>
<thead>
<tr>
<th>Recurrence Interval</th>
<th>Existing Conditions</th>
<th>Proposed Conditions</th>
<th>Pre-Mitigated Difference</th>
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</thead>
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<tr>
<td>2-year</td>
<td>41</td>
<td>43</td>
<td>2</td>
</tr>
<tr>
<td>10-year</td>
<td>63</td>
<td>66</td>
<td>3</td>
</tr>
<tr>
<td>25-year</td>
<td>74</td>
<td>77</td>
<td>3</td>
</tr>
<tr>
<td>100-year</td>
<td>88</td>
<td>92</td>
<td>4</td>
</tr>
</tbody>
</table>

Notes: Peak flow calculations were prepared using the Rational Method as described in the Santa Clara County Drainage Manual (Schaaf & Wheeler, 2007). Existing conditions are 98 percent pervious surface, proposed conditions will be 93 percent pervious surface (as outlined in the Preferred Alternative Land Use Matrix dated 8-21-09). The change in discharge will be diminished to nearly zero by application of BMPs, and detention along the floodplain of Canoas Creek. Source: Balance Hydrologics, 2010.

Because the project would follow BMPs, as described below in the discussion under in Standard of Significance #5, and would generate a small amount of additional runoff, the project would result in a less-than-significant impact.

5. Create or Contribute Increased Impervious Surfaces and Associated Runoff Water Which Would Provide Substantial Additional Sources of Polluted Runoff

Impacts related to impervious surfaces and associated runoff water would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below. Runoff from the project could potentially contain urban contaminants (from parking areas, for example), or runoff from the agricultural and landscaped areas may contribute additional nutrients and pesticides to receiving waters.
Best Management Practices (BMPs) have been included in the proposed Plan to reduce water quality impacts. At present the BMPs are conceptual in nature but would include practices such as landscaped buffer zones. Due to the project’s size and small incremental area of impervious surface, there are many opportunities for BMPs such as vegetated swales in the buffer zones planned for the park perimeter and to isolate the agricultural areas, or rain gardens or local detention in the parking lots.

- Vegetated bioswales are recognized by the RWQCB as effective BMPs in treating water quality, especially where residence times are sufficient and velocities can be controlled to avoid erosion and resuspension of sediments.

- Rain gardens are planted depressions that are designed to absorb runoff from impervious areas like roofs, driveways, walkways, and compacted lawn areas and percolate the water into the soil column.

The project would be required as part of the NPDES permit to describe the structural and nonstructural BMPs that would be implemented during the post-construction period, as outlined in Provision C.3 of the NPDES permit which specifically addresses the control of stormwater impacts associated with new development and redevelopment projects. In addition, the practices and procedures outlined in the SCVURPPP would assist in reducing the potential for impacts from non-point source pollution.65

Implementation of BMPs proposed in the Plan, in addition to those required under the NPDES permit and compliance with SCVURPPP procedures would result in a less-than-significant impact associated with increases in impervious surfaces.

6. Degradation of Surface or Groundwater Quality or Public Water Supply
Groundwater quality and public water supply impacts would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

The San Francisco RWQCB Basin Plan\textsuperscript{66} has set groundwater objectives to “maintain high quality groundwater (i.e. background levels),” so that groundwater does not contain concentrations of chemical constituents in amounts that adversely affect beneficial uses.

Possible pollutants from the project that could degrade groundwater quality are pesticides and fertilizers used on-site. Based on environmental reports prepared for properties in the vicinity of the project site, groundwater had previously been measured at depths ranging between approximately 12 to 22 feet bgs.\textsuperscript{67} This is sufficient depth between the surface and the groundwater for infiltration to reduce these potential pollutants.

The project will adhere to practices that would reduce the impacts of fertilizer or pesticide to the groundwater and surface water. For example, Plan guideline HYDRO.5 is to “adhere to County guidelines for use of pesticides and fertilizers in order to reduce potential adverse impacts to local and regional water resources,” as outlined in the County’s IPM Ordinance. Guideline AG.8 is to “utilize sustainable farming practices that integrate natural biological cycles and controls; protect and enhance soil fertility and the natural resource base; and minimize adverse impacts on public health, safety, wildlife, water quality and the environment.”

Under the County’s IPM Ordinance, pesticides used at the project site are registered through the County of Santa Clara Division of Agriculture, where future pesticide applications would also need to be registered. Most pesticides are immobile and would not transport past the soil zone and into the groundwater. However, proper implementation of BMPs, as previously outlined, would promote proper infiltration and lessen runoff to reduce pollutant loads from entering the groundwater and surface water.

\textsuperscript{66} California Regional Water Quality Control Board: San Francisco Bay Region, 2007, Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin (Region 2), page 294.

\textsuperscript{67} Ninyo & Moore Geotechnical and Environmental Sciences Consultants, 2003, Phase I Environmental Site Assessment for the Lester Property – 5285 Snell Avenue.
Because sustainable farming practices outlined in the proposed Plan would be followed in conjunction with BMPs, the impact would be less than significant.

7. Placement of Structures within a 100-Year Flood Hazard Area as Mapped on a Flood Hazard Delineation Map
Flood hazard impacts would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

The project would create new structures, including visitor center; visitor pavilion; caretakers residence; restrooms; rain shelters; agriculture packaging, processing, and storage facilities; a café; catering facilities; and produce stands. Because the project site is not located within a 100-year flood hazard zone, none of these structures would be built in a flood hazard area, and the impact would therefore be less than significant.

8. Placement of Structures within a 100-Year Flood Hazard Area That Would Impede or Redirect Flood Flows
Flood hazard impacts would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

Because the project site is not within the 100-year flood hazard area, none of the structures built on-site would redirect or impede flood flows within a 100-year flood hazard area. The impact from the project would therefore be less than significant.

9. Exposure of 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
Dam failure impacts would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

The project site is located within the mapped dam failure inundation area for two dams, the Leroy Anderson (on the Coyote River) and Calero Creek Dams, as shown on the Dam Failure Inundation Hazard Map for San Jose provided by the Associa-
tion of Bay Area Governments (ABAG). These dams are under the jurisdiction of the California Division of Safety of Dams (DSOD) within the Department of Water Resources. As such, they are subject to supervision by DSOD with regard to operations, maintenance, and repairs.

The project site is approximately 8 miles downstream from Calero Creek Dam. The project site is located 14 miles from Anderson Dam, located in an area that could be inundated in the normal weather conditions with normal flows in the streams and a full reservoir. It was calculated that the flood wave from Anderson Dam would take 5 hours and 24 minutes to reach the project site with a wave crest of 16.1 feet.

The Santa Clara County Operational Area Emergency Operations Plan addresses the possibility of dam failures, having an emergency action plan for the Anderson Dam and a general Dam Plan for other dams in the county. The plans are maintained by the SCVWD. The SCVWD’s Automated Local Evaluation in Real Time (ALERT) system includes 44 rain gages, 38 stream flow gages, 11 reservoir gages and one weather station which allow SCVWD to monitor hydrologic conditions or changes in real time.

SCVWD has implemented a dam instrumentation project as part of their Dam Safety Program. The instrumentation is capable of collecting, checking, recording, and archiving the collected data and alarming staff when parameters exceed set threshold limits. SCVWD routinely monitor and study the condition of each dam, providing reports to DSOD, working collaboratively with DSOD to assume that the dams in the county continue operating safely and conducting annual inspections.

The project would have a typical visitor use of 2,683 people on a typical weekday and 4,610 people on a typical weekend day during the high season. The project would

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68 Association of Bay Area Governments, 1995; the map is available at http://www.abag.ca.gov.
70 County of Santa Clara, 2008, Operational area emergency operations plan, 96p.
result in a potentially significant impact by exposing visitors to risks associated with dam failure.

**Impact HYDRO-1:** The project site is located within the mapped dam failure inundation areas for the Leroy Anderson and Calero Creek Dams, as shown on the Dam Failure Inundation Hazard Map for San Jose. The project would have a typical visitor use of 2,683 people on a typical weekday and 4,610 people on a typical weekend day during the high season. Therefore, the project would result in a potentially significant impact by exposing visitors to risks associated with dam failure.

**Mitigation Measure HYDRO-1:** The project proponents shall provide adequate public signage warning park patrons of potential flood hazard.

**Significance after Mitigation:** Less than significant.

10. **Location within an Area of Special Water Quality Concern**
Impacts related to affecting an area of special water quality concern would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

The project site is located within the Guadalupe Watershed. This watershed has a legacy of poor water quality in regards to mercury\(^1\) and diazinon (from particular pesticides) and is listed as impacted on the 303(d) list. The current diazinon concentration target in urban creeks shall not exceed 100 nanograms per liter (ng/L) as a one-hour average.\(^2\) Recommendations to change this limit have been proposed since water quality data collected has indicated ambient water concentrations of diazinon are at least an order of magnitude below the current water quality criteria.\(^3\)

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\(^2\) California Regional Water Quality Control Board: San Francisco Bay Region, 2007, Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin (Region 2), page 294.

\(^3\) Olivieri, A., 2006, Comments on Draft 2006 Revisions to the Section 303(d) list.
The proposed TMDL for mercury consists of concentration- and mass-based allocations which will be achieved by (a) reducing mercury inputs from mining and urban runoff, and (b) minimizing the transformation of mercury to methylmercury in impoundments and reservoirs. The purpose of the TMDL is to restore and protect a watershed over the long term, making them attainment goals and not enforceable by the regulating bodies.

Mercury can be present in urban runoff, mostly sourced from air pollution falling onto streets – a difficult source to control – and also from construction erosion, industry and tailpipe emissions. The project will not create any additional sources of mercury and water quality treatment from BMPs should decrease the naturally occurring mercury in urban runoff.

Diazinon can be used to control foliage and soil insects and pests of many fruit, nut, vegetable, forage, and field crops. Once applied, diazinon is moderately persistent (i.e. it does not readily change or degrade its chemical structure) and it is moderately mobile. These two qualities make diazinon a potential for groundwater contamination. Use of diazinon was phased out of urban uses in 2004. Diazinon is an EPA registered product that is also listed on the Federal Restricted Product list. Inclusion on this list dictates that all users of diazinon must register its use and be trained and pass an examination before being allowed to use the pesticide. Pesticide use must be registered through the County of Santa Clara Division of Agriculture.

Compliance with existing regulations and procedures regarding mercury and diazinon would result in less-than-significant impacts associated with being located within the Guadalupe Watershed.

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11. Use of Well Water Previously Contaminated by Contaminants Existing in the Groundwater Supply

Impacts related to contaminants from use of a previously contaminated well would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below. Use of the on-site well is proposed at the project-level.

Although there are known regional contamination issues with nitrates and mercury, the water for the on-site well that would be used as a water source for the proposed project does not have this legacy. Although the on-site well is currently inaccessible to sample, the near-by wells at the Life Estate are of good water quality (see Table 4.10-3). Therefore, this impact would be less than significant.

12. Construction of a Septic Field on Soil with Severe Septic Drain Field Limitations or Where a High Water Table Extends Close to the Natural Land Surface

Impacts related to construction of a septic field would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

The project would not involve the use of any septic fields. Therefore, there would be no impact associated construction of a septic field.

13. Location of a Septic Field within 50 feet of a Drainage Swale; 100 feet of Any Well, Water Course, or Water Body; or 200 feet of a Reservoir at Capacity.

Impacts related to construction of a septic field would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

The project would not involve the use of any septic fields. Therefore, there would be no impact associated with location of a septic field.
14. Conflict with Water Resources Protection Collaborative Guidelines and Standards for Land Uses near Streams

Impacts related to the water resources protection collaborative guidelines would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

Since the project is near Canoas Creek it must act in accordance with the Water Resources Protection Ordinance (Ordinance 06-1) adopted by SCVWD on October 24, 2006 (See Section A.2.e, above, for further discussion of the ordinance). The ordinance is designed to complement existing regulations, such as the City, County, SCVWD, and NPDES provisions, which address some related water quality issues. (For a detailed discussion of runoff, see Standard of Significance #5.)

If the project follows the guidelines outlined in the ordinance, as required, the impact would be less than significant. The conceptual design of the project is already consistent with these guidelines, and includes provisions such as protection of the riparian zone, removing invasive species and planting non-native species.

15. Extension of a Sewer Trunk Line with Capacity to Serve New Development

Sewer trunk line extension impacts would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

The existing Downer-Canoas Trunk Sewer runs north through the western portion of the Park. Therefore, no sewer trunk extension would be required to connect the site to the sewer system,76 and there would be no impact.

16. Significant Changes to Receiving Water Quality during or Following Construction Requiring an NPDES Permit for Construction

Impacts related to the NPDES permit for construction would be same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

76 County of Santa Clara Parks and Recreation Department, 2009, Martial Cottle Park Final Resource Inventory.
Since the project would modify more than 1 acre of land, the project would require a NPDES permit (see Section A.1.d). During the construction phase of development, sediment is typically of greatest potential concern to violate water quality standards. Pollutants other than sediment which might degrade water quality during project construction include petroleum products (gasoline, diesel, kerosene, oil, and grease), hydrocarbons from asphalt paving, paints, solvents, detergents, nutrients (fertilizers), pesticides (insecticides, fungicides, herbicides, rodenticides), and litter.

Once the structures and trails have been constructed, runoff contaminants might include fertilizers, as well as trace metals from pavement runoff, nutrients and pathogens from pet wastes, and landscape maintenance debris. Stormwater runoff currently drains to receiving waters with no treatment.

During construction the project would require BMPs in construction contracts, consistent with NPDES General Construction Activity Stormwater Permit requirements to minimize sedimentation resulting from construction and the transport of soils by construction vehicles. The applicant would be required to submit a Notice of Intent to the State Board and apply for coverage under the NPDES Construction General Permit and to prepare a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP (see also Section A.1.d in this chapter, above) can be used to assist in developing the permit and details the site-specific BMPs to control erosion and sedimentation and maintain water quality during the construction phase. The SWPPP also contains a summary of the structural and non-structural BMPs to be implemented during the construction period, pursuant to the non-point source practices and procedures encouraged by SCVURPPP and the Regional Board. Of particular importance is preventing runoff with high sediment concentrations or poor water quality.

quality from entering Canoas Creek, which eventually drains to Guadalupe River and then to San Francisco Bay.

Following the procedures outlined in the permits will prevent construction practices of the project to not violate established water quality standards or waste discharge requirements. Compliance with the SWPPP and NPDES permit would reduce the impact to a less-than-significant level.

17. Increase in any Existing Pollutants to an Already Impaired Water Body
Impacts related to increasing pollutants would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

Runoff from the project drains to Canoas Creek, which is not an impaired water body. However, Canoas Creek drains to Guadalupe River which eventually enters San Francisco Bay-South Bay. This watershed has a legacy of poor water quality in regards to mercury and diazion (from particular pesticides) and is listed as impacted on the 303(d) list. See discussion of Standards of Significance #11. Water quality testing in 2004 of Canoas Creek was found to not have detrimental levels of mercury or pesticides.80

The San Francisco Bay is listed as impacted on the 303(d) list; in some cases for certain constituents only a portion of the Bay is listed. The Bay in its entirety is considered impaired for total mercury, methylmercury, polychlorinated biphenyls (PCBs), and dioxins. Parts of the Bay are listed for selenium, legacy pesticides (such as DDT) and PAHs. The South Bay, which includes the portion of San Francisco Bay south of the Dumbarton Bridge, is a unique, water-quality-limited environment that requires controlling urban and upland runoff sources to maintain water quality. Site-specific objectives includes dissolved copper and nickel as current, ambient levels in the Bay are above water quality criteria for the protection of aquatic life.

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80 Ninyo & Moore Geotechnical and Environmental Sciences Consultants, 2004, Phase II Environmental Site Assessment for the Lester Property – 5285 Snell Avenue.
The use of BMPs (see Standards of Significance #18) would reduce the potential impacts of the contaminants reaching Guadalupe River or the Bay, ensuring that impacts would be less than significant.

18. Substantial Change in the Direction, Rate of Flow, Quantity, or Quality of Ground Waters

Groundwater impacts would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

A discussion of the potential impact to groundwater supplies, with regard to groundwater withdrawal, is provided under Standards of Significance #2. The potential impacts to groundwater quality are discussed under Standards of Significance #6.

Since no sub-ground level structures are proposed to be built the project would not interfere with groundwater flow patterns. Groundwater pumping would locally alter flow patterns during the times of pumping, but the amount of pumping proposed at the on-site well is not enough to substantially alter regional groundwater flow patterns. (See also discussion of groundwater pumping impacts under Standard of Significance #2, above.) Therefore, the impact would be less than significant.

19. Substantial Interference with Groundwater Recharge or Reduction in the Amount of Groundwater Otherwise Available for Public Water Supplies

Groundwater impacts would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below.

The project would not significantly interfere with groundwater recharge or cause a reduction in the amount of groundwater available for pumped water supplies. While some additional impervious surfaces are proposed as part of this project, the increase is small (approximately 5 percent). In addition, Guideline HYDRO.4 in the Plan is to, “Reduce stormwater run-off by minimizing the amount of impermeable surfaces in the park and incorporating pervious surface treatments where feasible.” The limited impervious surfaces would be offset by BMPs implemented throughout the project that encourage treatment and infiltration of stormwater runoff, including for example, the buffer zones along the perimeter and agricultural areas. In addition, the project site is a large tract of land located within an urban/suburban area (with mod-
erate- to high-imperviousness). Protecting this land from being developed would allow for maintained recharge relative to the surrounding areas. Therefore, the impact would be less than significant.

20. Involvement of a Surface Water Body, Natural Drainage Channel, Streambed, or Water Course Such as to Alter the Amount, Location, Course, or Flow of its Waters

Surface water impacts would be the same for Phase 1 and subsequent phases. As such, project-level and program-level components are not distinguished below. The floodplain wetland is proposed at the program-level.

The project does not plan to alter a surface water body, a natural drainage channel, a streambed, or a water course. Part of the project goals is to re-vegetate, with native vegetation, the channel banks of Canoas Creek. This would be completed under compliance with Santa Clara Valley Water District’s goals. Re-vegetation could slow down flow in the creek. The wetland planned as part of the project will be in the flood zone of the creek and will therefore not alter the flow of the channel. Therefore, the project would create a less-than-significant impact.

E. Cumulative Impacts

This section analyzes potential impacts to hydrology and water quality that could occur from a combination of the proposed project with other reasonably foreseeable projects in the surrounding area.

Any foreseeable projects in the surrounding area would likely be urban development and therefore be required to use municipal water and not create a cumulative impact by pumping groundwater. Groundwater pumping at the project site is not expected to substantially deplete groundwater supplies within the underlying aquifer but if additional wells are installed near the project site the cumulative effect will need to be evaluated. See also the project WSA (Appendix H), which discusses potential broader, long-term impacts to groundwater and other water supply.
All development or redevelopment in the vicinity of the project is subject to the federal, State, and local laws and regulations described above. Compliance with these laws and regulations will prevent substantial adverse impacts.

Given that the project would incorporate appropriate stormwater quality and detention treatment measures (resulting in a less-than-significant impact to groundwater and surface water quality), the cumulative impacts are also considered less-than-significant. Keeping the project under minimal development, unlike the surrounding urban/suburban areas, will keep cumulative impacts low by preventing additional urban contamination into surface water and local groundwater.