4.10 Hydrology and Water Quality

This section describes the existing hydrology and water quality conditions of the project site and vicinity, identifies associated regulatory requirements, evaluates potential project and cumulative impacts, and identifies mitigation measures for any significant impacts related to implementation of the Laguna Creek Diversion Retrofit Project (Proposed Project). The analysis is based on technical studies and data that describe the flow pattern and turbidity in Laguna Creek; and other relevant documents, data, and web map viewers that describe the hydrology and water quality in the project area.

A summary of the comments received during the scoping period for this environmental impact report (EIR) is provided in Table 2-1 in Chapter 2, Introduction, and a complete list of comments is provided in Appendix A. There were no comments related to hydrology and water quality.

4.10.1 Existing Conditions

The project site is near the community of Bonny Doon, California, in unincorporated Santa Cruz County, approximately 7 miles northwest of downtown Santa Cruz (straight-line distance). The elevation of the site ranges from approximately 605 feet above mean sea level (amsl) at the downstream end of the proposed work area within Laguna Creek to approximately 660 feet amsl at the highest point along the east construction access road. The limits of the construction zone for the Proposed Project encompass approximately 2.1 acres, including the Laguna Creek Diversion Facility (Facility), 200 to 300 feet of the upstream and downstream reaches of Laguna Creek, and three access roads from Smith Grade. Smith Grade marks the site's southern boundary. The temporary disturbance footprint within the 2.1-acre project site is estimated to be ~~0.44~~0.51 acres, which includes both in-stream and land-based construction disturbances (staging areas, access roads, dewatered creek bed, and structural work). The permanent footprint consists of the new intake structure and Coanda screen, valve vault, diversion pipeline, access stairway, and grouted riprap bank protection and is estimated to be 0.01 acres. The following section summarizes the existing hydrological and water quality conditions of the project site and the current flow pattern in Laguna Creek.

4.10.1.1 Surface Water Resources

Regional Watersheds

The U.S. Geological Survey (USGS) Watershed Boundary Dataset identifies watersheds within the project vicinity and delineates watersheds according to hydrologic units (HUs), identified by name and by hydrologic unit code (HUC) (USGS 2020). At a statewide scale, HUs consist of large regions and subregions draining to a common outlet. At this scale, the project site is within the 674-square-mile San Francisco Coastal South Subbasin (HUC 18050006), which includes all watersheds on the coastal side of the San Francisco peninsula. At the most detailed level available from the USGS (2020a), the project site is located in the San Vicente Creek-Frontal Pacific Ocean subwatershed, which includes a 93-square-mile area that encompasses the coastal streams of southwestern Santa Cruz County from Molino Creek to the north to Wilder Creek to the south (USGS 2020). These watershed areas are listed in Table 4.10-1.

Table 4.10-1. Watershed Designations by Agency

Agency	Hydrologic Unit Code/Basin Number	Agency Analysis Scale	Name	Size (square miles)
USGS Watershed Boundary Dataset	180500	Basin (4-digit HU)	San Francisco Bay	5,371
	18050006	Subbasin (6-digit HU)	San Francisco Coastal South	674
	1805000603	Watershed (8-digit HU)	Waddell Creek-Frontal Año Nuevo Bay	273
	180101100602	Subwatershed (12-digit HU)	San Vicente Creek-Frontal Pacific Ocean	93
Central Coast RWQCB	304	Hydrologic Unit	Big Basin HU	276
	304.1	Hydrologic Area	Santa Cruz HA	246
	304.11	Hydrologic Subarea	Davenport HSA	96
City of Santa Cruz	N/A	Watershed	Laguna	7.8

Source: USGS 2020, Central Coast RWQCB 2019, SCWD 2020
Notes: HA = hydrologic area; HSA = hydrologic subarea; HU = hydrologic unit; RWQCB = Regional Water Quality Control Board; USGS = U.S. Geological Survey.

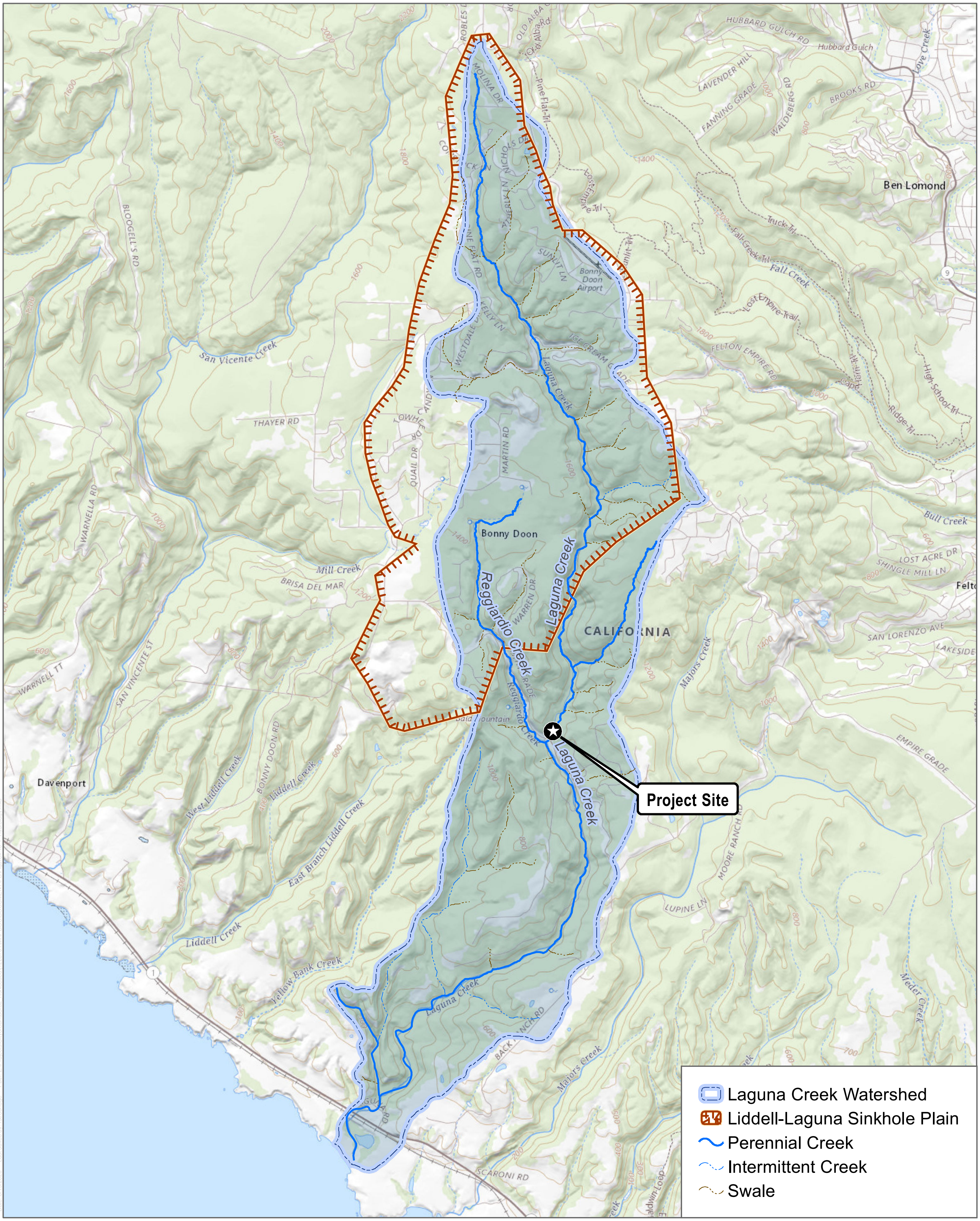
Although the State Water Resources Control Board (SWRCB) classifies watersheds in a hierarchical system similar to the USGS Watershed Boundary Dataset, it uses watershed names and boundaries that are designated by the California Department of Water Resources (DWR). These geographic boundaries are likewise watershed based, but are typically referred to as hydrologic basins and are defined in the *Water Quality Control Plan for the Central Coastal Basin* (Basin Plan) (Central Coast RWQCB 2019).[1] These generally constitute the geographic basis around which many surface water quality problems and goals/objectives are defined, and consist of surface water HUs, hydrologic areas (HA), and hydrologic subareas (HSA). As shown in Table 4.10-1, the project site is within the Big Basin HU (No. 304), the Santa Cruz HA (No. 304.1), and the Davenport HSA (No. 304.11) (Central Coast RWQCB 2019).

The five watersheds that serve as drinking water sources for the Santa Cruz Water Department (SCWD) are as follows: Laguna, Liddell, Majors, Newell, and San Lorenzo. The Laguna Watershed, as delineated by the City for water resource assessment and planning purposes, is approximately 7.8 square miles (4,992 acres). The Laguna Watershed is the most detailed and appropriate watershed area to use as the surface water study area for the Proposed Project, and is shown in Figure 4.10-1 and listed in Table 4.10-1.

Laguna Creek and Watershed

The project site is within the middle reach of Laguna Creek, an 8.5-mile-long perennial stream that flows southwest and originates on the southern flank of Ben Lomond Mountain in the Santa Cruz Mountains. Reggiardo Creek (a perennial stream) is the largest tributary and has a confluence with Laguna Creek approximately 204 feet downstream of the project site, south of Smith Grade as shown in Figure 4.10-1 (USGS 2020). Numerous other unnamed ephemeral and intermittent tributaries and swales confluence with Laguna Creek along its entire length. The mouth of Laguna Creek discharges into a lagoon before ultimately draining into the Pacific Ocean along the Santa Cruz County coastline.

[1] The Basin Plan for each region serves as the regulatory reference for meeting both state and federal requirements for water quality control. It designates beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving those objectives.



SOURCE: Bing Maps 2020, USGS 2020 (Watershed Boundary Dataset), City of Santa Cruz 2020

0 2,250 4,500 Feet

FIGURE 4.10-1

Laguna Creek Watershed

Laguna Creek Diversion Retrofit Project - EIR

The elevation of the watershed ranges from 0 feet at the mouth to approximately 2,420 feet at its headwaters near Empire Grade. It is underlain largely by mid- to late-Tertiary sedimentary rocks with the exception of granitic, metasedimentary rocks, limestone, and marble outcroppings (commonly known as karst topography) in the upper reaches of the watershed. The karst topography has a significant influence on streamflow and summer baseflow by producing multiple springs within the watershed (SCWD 2005). Figure 4.10-1 shows the Liddell-Laguna sinkhole plain where permeability between the two watersheds exists due to the karst topography. Tracer studies suggest that the marble deposits are interconnected into a single karst groundwater system. The marble may be more extensive at depth (i.e., than at the surface) and/or the individual bodies may be interconnected by fractures and marble interbeds within the metamorphic rocks. Based on calcareous cementation in the Lompico Sandstone in Laguna Creek, downstream of Smith Grade Road, the sandstone is locally underlain by marble. Marble has little primary porosity and very low permeability where unfractured and unweathered. Dissolution of the marble by slightly acidic percolating soil water and flowing groundwater results in substantial secondary porosity, including macropores, such as caverns and conduits. In addition, swallow holes tend to form where streams flow across marble outcrops, forming sinking stream reaches, including along Laguna Creek upstream of the project site. This sinking stream reach along Laguna Creek intersects fracture zones leading to the Liddell Creek Watershed. As a result, stream water losses occur where Laguna Creek traverses karst topography upstream of the Facility (County of Santa Cruz 2007; Nolan Associates 2016; City of Santa Cruz 2020).

The karst topography is also more resistant to erosion than other material in nearby watersheds, resulting in reduced fine sediment loads. The Laguna Watershed also has granitic formations that provide a source of gravel and cobble, evident in the reaches downstream of the Facility where large cobble and gravel dominate the streambed substrate. The Laguna Creek channel gradient from the diversion to the mouth is approximately 3%, and the channel gradient upstream of the diversion to the headwaters is approximately 6% (SCWD 2005).

The watershed is characteristic of many of the watersheds draining the coastal side of the Santa Cruz Mountains, consisting of rugged, ridge-and-valley terrain, including narrow-crested, steep-sided ridges and deeply incised, v-shaped valleys. Streams within the watershed are dominated by riffle and pool sequences, with boulder-cobble-sand substrates. Little floodplain storage exists in the narrow, steep valleys of the Santa Cruz Mountains. Thus, downcutting of stream valleys has created channel banks that are typically steeper than the adjacent hill slopes (SCWD 2013).

Developed land use within the Laguna Watershed primarily consists of rural residential and rangeland, though the majority of the watershed is undeveloped open space consisting of redwood forest. A large portion of the watershed consists of public lands managed by California State Parks, CDFW (Bonny Doon Ecological Preserve), Bureau of Land Management, the Living Landscape Initiative (San Vicente Redwoods), and the City.

Streamflow and Diversions

Rainy winter periods and dry summer months are typical of the Mediterranean climate in the central coastal areas of California, including the Santa Cruz Mountains. The coastal range enhances precipitation generated by Pacific frontal storms by forcing the upward movement of air currents, leading to some of the highest rainfall amounts in the broader region. About 85% of the total annual rainfall typically occurs during the wet season, generally between November and March (SCWD 2005). In the summer months, with low precipitation, groundwater acts as the source of baseflow. The last 12 years of precipitation data for the City, from 2007 to 2019, show that the average monthly precipitation ranged between nearly 0 inches in July and August to nearly 5 inches in January; the wettest months, between November and March, had an average of 2 inches of rainfall per month (Weather Cat 2020). The City's Liddell Spring rain gage is the most representative of precipitation at the project site. Based on 19 years of rainfall measurements, the average rainfall at the Project site is approximately 32 inches per year (Balance Hydrologics 2019a).

Laguna Creek streamflow data is available from a former USGS gage located approximately 800 feet upstream from the Facility (City of Santa Cruz 2019); this gaging station is referred to herein as the USGS Laguna Creek Stream Gage (USGS Gage #11161590). Average (or mean) daily streamflow flow records are available from this station from October 1969 to October 1976. Laguna Creek is not regulated (i.e., no dams or diversions) upstream of this gaging station; therefore, this streamflow data is representative of natural streamflow conditions at the Facility. The average streamflow at this gaging station for this time period is 5.0 cubic feet per second (cfs) (see Table 4.10-2). This flow was derived from the contributing watershed above the City's diversion structure.

The City installed a new Laguna Creek gaging station in February 2003, referred to herein as Upper Laguna Creek Gaging Station, which is approximately 300 feet upstream of the Facility (Balance Hydrologics 2019a). This streamflow gauge similarly is representative of natural, unimpeded streamflow conditions at the Facility. Based on streamflow data from October 2003 to September 2019, the average annual flow is 5.05 cfs (see Table 4.10-2).

Streamflow data is also available from two gages located downstream of the Facility. The City's Lower Laguna Creek Gaging Station, currently located within the concrete culvert beneath Smith Grade approximately 300 feet downstream of the Facility (and previously located immediately downstream of that in the culvert plunge pool), had an average streamflow of 3.46 cfs from October 2003 to September 2019 (Balance Hydrologics 2019b) (see Table 4.10-2). Further south, the City's Anadromous Laguna Creek Gaging Station, currently located approximately 750 feet upstream of the State Route 1 culvert (and previously located approximately 100 feet upstream of the culvert), had an average streamflow of 6.04 cfs from October 2003 to September 2019 (Balance Hydrologics 2019c).

Table 4.10-2. Summarized Historic Records of Daily Flow in Laguna Creek

Streamflow Gage Name	Streamflow Gage Location	Years of Daily Streamflow Data	Average Streamflow Rate (cfs)
USGS Laguna Creek Stream Gage (USGS Gage #11161590)	lat 37° 01′ 32″, long 122° 07′ 48″, ~800 feet upstream of Facility[1]	1969 to 1976	5.00
Upper Laguna Creek Gaging Station (City Gage)	lat 37° 01′ 30.38″, long 122° 07′ 51.84″, ~300 feet upstream of Facility[2]	2003 to 2019	5.05
Lower Laguna Creek Gaging Station (City Gage)	lat 37° 01′ 25″, long 122° 07′ 49″, within the concrete culvert under Smith Grade, ~300 feet downstream of Facility[3]	2003 to 2019	3.46
Anadromous Laguna Creek Gaging Station (City Gage)	lat 36° 59′ 13.07″, long 122° 09.6′ 83°, ~750 feet upstream of SR 1 culvert[4]	2003 to 2019	6.04

Sources:
1 City of Santa Cruz 2019.
2 Balance Hydrologics 2019a.
3 Balance Hydrologics 2019b.
4 Balance Hydrologics 2019c.
Notes: ~ = approximately; cfs = cubic feet per second; lat = latitude; long = longitude; SR = State Route.

In general, low flow remains in the creek in summer and fall in normal and wet years. Average flow in the creek tends to increase throughout the winter and spring. Winter and spring storms can produce pronounced peaks in flow immediately following storm events or successive winter rains. The flow pattern is characterized as flashy, with periodic high-flow events that coincide with and immediately follow winter storms (SCWD 2005).

In order to determine peak flow rates that are critical in channel geomorphology and the evaluation of potential scour of creek banks, hydraulic modeling for the project site was completed using computational fluid dynamics (B&V 2020b). Peak flow rates for a typical peak winter storm (2-year flood event), a significant flood event (100-year flood event), and an extreme flood (the upper 95th percentile confidence limit of the 100-year flood event) were determined to evaluate whether the existing channel at and downstream of the diversion structure experiences significant scour.

Peak flows along the project reach were determined to be 119 cfs, 527 cfs, and 833 cfs, for the 2-year, 10-year, and 100-year flow events, respectively. The modeling results for existing dam conditions indicate that high flow velocity of greater than 25 feet per second occurs at the toe of the dam due to the height of the vertical drop. Because of the rocky geology of the project site, the creek bed and bank line are not subjected to scour (B&V 2020b).

Laguna Creek water production (i.e., water diverted to the treatment plant from the existing Facility) has been recorded by the City from 1971 to 2019. Over the 48-year period of record, the average monthly production ranged between 0 and 81.71 million gallons, with an average of approximately 39 million gallons. The highest annual production was recorded in 2006 (980.56 million gallons). The lowest annual production of 0 million gallons was recorded in 2015 at the height of the recent historic drought period (2011 to 2017), when there was insufficient excess flow to allow for diversions. Per ongoing agreements with the CDFW, the City limits its diversions from Laguna Creek as necessary to meet a minimum flow goal of 2 cfs at the Anadromous Laguna Creek Gaging Station, for the purpose of supporting salmonid habitat within the downstream reaches of Laguna Creek. However, minimum annual flow rates as high as 15.5 cfs are sometimes maintained. The City rarely diverts creek flow during the summer and fall since stream flows at times naturally fall below 2 cfs during those dry periods.

Water Quality

General Water Quality

Laguna Creek is not listed in the Clean Water Act Section 303(d) list of impaired water bodies (SWRCB 2016). Due to the relatively undeveloped nature of the watershed, the high amount of tree canopy, and the geology and soils underlying the watershed, water temperatures, turbidity, and dissolved oxygen levels are adequate to support cold freshwater habitat including steelhead.[2] Temperatures range from 5.5°C to 18.5°C with an average of 11.3°C, and dissolved oxygen is normal, though there may be parts of the lower reaches of the creek that are low-gradient and may have low dissolved oxygen during the summer and fall baseflow period (SCWD 2005). The annual geometric mean of coliform bacteria concentrations measured in Laguna Creek between 2011 and 2017 ranged from about 10 to 800 most probable number (MPN) per 100 milliliters (mL). These data collected by the City, in combination with low turbidity levels (discussed below), indicate that Laguna Creek, as with the other North Coast creeks used by the City for water supply, typically has very good water quality conditions (Kennedy/Jenks Consultants 2018).

2 While water quality conditions are adequate to support cold freshwater habitat including steelhead, anadromous fish species are not present in the project area due to several downstream natural barriers that limit the movement of such fish species upstream into the project area.

Sampling and analysis conducted for the upper watershed of Laguna Creek, as part of the SCWD Watershed Sanitary Survey Update (Kennedy/Jenks Consultants 2018), are summarized in Table 4.10-3. These data indicate that water quality is good and none of the water quality constituents exceed their respective maximum contaminant levels (MCLs) or secondary MCLs. Due to the lack of regulatory cleanup sites or land uses known to store hazardous materials in the Laguna Watershed, organic contaminants (i.e., fuels, solvents, etc.) are not a water quality concern (Kennedy/Jenks Consultants 2018, SWRCB 2020a).

Table 4.10-3. Summary of Water Quality Analyses for Laguna Creek (2011 to 2017)

Parameter (Unit)	Average	Median	Low	High	Number of Samples	Maximum Contaminant Level or Secondary Maximum Contaminant Level
Nitrate (mg/L)	0.37	0.38	0.00	0.78	47	10 mg/L as nitrogen, 45 mg/L as nitrate
Total Hardness (mg/L)	137.3	142.0	56.0	174.0	132	—
Calcium (mg/L)	41.9	45.0	15.0	57.0	10	—
Magnesium (mg/L)	5.1	5.2	2.8	6.6	10	—
Sodium (mg/L)	10.3	10.5	7.0	13.0	10	—
Potassium (mg/L)	2.1	2.1	1.8	2.5	10	—
Alkalinity (mg/L)	131.2	136.0	44.0	164.0	132	—
Sulfate (mg/L)	14.3	14.9	5.7	17.6	35	SMCL- 250 mg/L
Chloride (mg/L)	10.5	10.6	7.1	12.2	35	SMCL-250 mg/L
Fluoride (mg/L)	0.07	0.08	.000	0.11	35	2 mg/L
pH	8.1	8.1	7.5	8.3	132	—
Total Dissolved Solids (mg/L)	17.7.1	189.0	80.0	250.0	11	SMCL-500 mg/L
Conductivity (900 umhos/cm)	267.0	265.0	130.0	365.0	132	SMCL-900 umhos/cm
Color (Color Unit)	6.3	4.0	2.0	36.0	132	—
MBAS methylene blue active substances assay (mg/L)	0.00	0.00	0.00	0.00	6	0.5 mg/L

Source: Kennedy/Jenks Consultants 2018 (Table 5-4 to Table 5-17).
Notes: MCL = maximum contaminant level; mg/L = milligrams per liter; SCML = secondary maximum contaminant level; umhos/cm = micromhos per centimeter.

Turbidity

Turbidity in Laguna Creek has a median of 0.5 nephelometric turbidity units (NTU) (SCWD 2005). During storm events when turbidity increases to more than 20 NTUs, the City stops diverting. A review of turbidity data collected between 2011 and 2017 shows that Laguna Creek had the lowest average turbidity compared to all other City water sources (San Lorenzo River, Newell Creek, and other north coast streams), from a typical minimum of less than 0.1 NTU to a maximum of about 15 NTU in 2017 (as a 10-sample running average). The data collected over the period show that except for 2017, which was a very wet year producing significant runoff within the watersheds, the running average for turbidity in Laguna Creek did not exceed 1 NTU. Because the data was collected on a pre-defined schedule (i.e., once or twice a month), it does not necessarily capture the highest turbidity levels following peak storm events.

Sediment transport in Laguna Creek, upstream of the Facility, was monitored from 2008 to 2012, in order to collect enough data to identify the dominant mode of sediment transport, describe sediment transport variability, and facilitate development of discharge-to-sediment transport rating curves. Monitoring included an estimation of bedload and suspended sediment. Bedload includes sediment that rolls and saltates (i.e., bounces) along the bed, commonly within the lowermost 3 inches of the water column. Movement can either be continuous or intermittent but is generally much slower than the average velocity of the stream. Suspended sediment is supported by turbulence within the water column and is transported at a rate approaching the average stream velocity of flow. In Laguna Creek, suspended sediment consists primarily of fine sand, silt, and clay. Sediment samples were collected over a range of flows, from 9 cfs to 157 cfs, although peak flows recorded within the same period far exceeded 150 cfs. Based on this monitoring, the suspended sediment for Laguna Creek comprises approximately 75% to 89% of the total sediment load, similar to reports for other streams in the Santa Cruz Mountains. However, Laguna Creek upstream of the Facility exhibits lower (5 to 7 times less) annual suspended sediment yields compared to Majors Creek[3] upstream of Majors Dam. The difference is likely due to the underlying geology. Upper Laguna Creek is underlain primarily by highly resistant granitic rocks, whereas Upper Majors Creek is underlain by more erosive sandstone and siltstone. The sand to gravel size bedload sediments in upper Laguna Creek are most likely derived from bank or hillside soil failures, rather than erosion of the underlying bedrock (Balance Hydrologics 2011, 2013).

Additional sediment monitoring was completed upstream and downstream of the Laguna Creek and Majors Creek Dams, from December 2010 to April 2011. Monitoring indicated that when compared to Majors Creek, Laguna Creek transports a substantially less volume of sediment, with a majority being transported as suspended load. As previously discussed, the relative decrease in sediment transport in Laguna Creek is likely due to the underlying geology (Balance Hydrologics 2012, 2013).

An Intake Sediment Mobility Assessment (Waterways Consulting 2017) conducted at the Facility reported that opening of the sediment-control bypass valves during low flows, when the creek is unable to transport and distribute sediment effectively, may lead to downstream accumulations of sediment. The sediment transport rates within Laguna Creek at the Facility have been comparatively lower than other nearby watersheds, including the watersheds for Liddell, Reggiardo, and Majors creeks. The local streambed material in Laguna Creek near the Facility was observed to be coarser compared to those in transport, which are derived from other sources, such as landslides, tributaries and bank erosion. Overall, due to the lack of roads, more resistant geologic material, and fewer recent land use impacts, erosion and sedimentation rates in Laguna Creek are only slightly above natural background rates (SCWD 2013). In instances where high turbidity concentrations have been observed, these high turbidity concentrations are reported as short-term and as the result of high-flow storm events. These data indicate that Laguna Creek, as with the other North Coast creeks used by the City for water supply, typically has very good water quality conditions except during storm events when suspended sediment loads may increase in response to runoff from upper portions of the watershed.

4.10.1.2 Groundwater Resources

The Laguna Watershed is characterized by a bedrock groundwater aquifer, where subterranean water exists in fracture and fault zones within the underlying sedimentary and metamorphic rocks. Beyond the project area, portions of the watershed are underlain by karst terrain, consisting of limestone, dolomite, and gypsum, which have a tendency to form underground drainage systems with sinkholes and caves. These drainage systems can surface, producing springs which contribute to base flow within Laguna Creek. However, as previously discussed, swallow holes tend to form where streams flow across marble outcrops, forming sinking stream reaches, including Laguna

[3] The Majors Watershed is immediately southeast of the Laguna Watershed.

Creek upstream of the project site. This sinking stream reach along Laguna Creek intersects fracture zones leading to the Liddell Watershed. As a result, stream water losses occur where Laguna Creek traverses karst topography upstream of the Facility. Although there is subterranean water within the watershed, DWR has not designated the project site as within one of California's 517 groundwater basins (DWR 2020a). The nearest groundwater basin to the project site is the Santa Margarita Basin (DWR Basin No. 3-027), approximately 3.2 miles northeast of the project site (DWR 2020a).

A search of DWR's well completion report database yielded records for four wells within Township 10S, Range 02W, Section 30 (Public Land Survey System), within the vicinity of the project site (DWR 2020b). The wells are permitted by Environmental Health Services of Santa Cruz County, and are monitoring and domestic wells that were drilled between 1984 and 1998; it is unknown whether these wells are currently active. The static water levels were reported to be approximately between 95 to 145 feet below ground surface when the wells were drilled (DWR 2020b).

There is no publicly accessible data available pertaining to groundwater quality within the bedrock aquifer that underlies the Laguna Watershed. A review of the groundwater ambient monitoring and assessment dataset maintained by SWRCB (2020b) indicates that there are no groundwater quality monitoring wells or groundwater quality sampling data pertaining to the site or the surrounding area. No regulatory cleanup sites (and associated groundwater quality monitoring data) were identified within a 1-mile radius of the project site, indicating a lack of land uses that could be a source of contaminants to the bedrock aquifer (SWRCB 2020a).

4.10.1.3 Hydrologic Hazards

Flood mapping by the Federal Emergency Management Agency (FEMA) indicates that the project site is not within a Special Flood Hazard Area, which includes both 100-year flood zones and regulatory floodways (FEMA 2017). The project site is designated by FEMA within flood zone X, which designates areas of minimal flood hazard (FEMA 2017).

There are five reservoir dams located in Santa Cruz County that are regulated by the State Division of Safety of Dams. These dams, which are all within the San Lorenzo Watershed, include Oak Site Dam, Mill Creek Dam, Sempervirens Dam, Soda Lake Dam, and Newell Creek Dam. The latter is within the jurisdiction of the City of Santa Cruz and the remaining are the responsibility of state agencies or private entities. The reservoirs range in size from 20 acre-feet to over 10,000 acre-feet, with the oldest dam being constructed in the late 1890s and the newest in 1985. Three additional state-regulated dams located in neighboring counties also have the potential to affect Santa Cruz County residents and properties should those dams be compromised or fail. These dams include Elmer J. Chesbro Dam and Uvas Dam in Santa Clara County, as well as the San Justo Dam in San Benito County. However, none of these dams are located within the Laguna Watershed and the project site is not subject to dam failure hazards or seiche because it is not located adjacent to or downstream of a reservoir (County of Santa Cruz 2015). According to the records maintained by the County of Santa Cruz Planning Department, there have been no dam failures in the County. Rare events involving uncontrolled releases of water due to natural and human causes have occurred historically, although none of these events involved dam failure (County of Santa Cruz 2015).

4.10.2 Regulatory Framework

4.10.2.1 Federal

Clean Water Act

The Clean Water Act (CWA), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality (33 United States Code Section 1251 et seq.). The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA establishes basic guidelines for regulating discharges of both point and non-point sources of pollutants into the waters of the United States.[4] The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA. Commonly relevant sections of the act are as follows:

- **Sections 303 and 304** provide for water quality standards, criteria, and guidelines. Under Section 303(d) of the CWA, the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. California is required to establish total maximum daily loads (TMDLs) for each pollutant/stressor. A TMDL defines how much of a specific pollutant/stressor a given water body can tolerate and still meet relevant water quality standards. Once a water body is placed on the Section 303(d) List of Water Quality Limited Segments, it remains on the list until a TMDL is adopted and the water quality standards are attained, or there is sufficient data to demonstrate that water quality standards have been met and delisting from the Section 303(d) list should take place. As discussed above, there are no water quality impairments relevant to the Proposed Project, and thus no TMDLs apply.
- **Section 401 (Water Quality Certification)** requires an applicant for any federal permit that proposes an activity which may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the CWA. This process is known as the Water Quality Certification/waste discharge requirements (WDRs) process. Because the Proposed Project involves in-stream work, a CWA Section 401 permit is required.
- **Section 402 (National Pollutant Discharge Elimination System)** establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permit program is administered by the SWRCB and the nine Regional Water Quality Control Boards (RWQCBs), who have several programs that implement individual and general permits related to construction activities, stormwater runoff quality, and various kinds of non-stormwater discharges. The NPDES General Construction Permit is discussed further below.
- **Section 404** (**Discharge of Dredged or Fill Material into Waters of the United States)** establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is jointly administered by the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA). Section 4.4, Biological Resources, addresses this requirement in greater detail.

4 Point source discharges are those emanating from a pipe or discrete location/process, such as an industrial process or wastewater discharge. Non-point source pollutants are those that originate from numerous diffuse sources and land uses, and which can accumulate in stormwater runoff or in groundwater.

Numerous agencies have responsibilities for administration and enforcement of the CWA. At the federal level, this includes the EPA, USACE, Bureau of Reclamation, and the major federal land management agencies such as the U.S. Forest Service and Bureau of Land Management. At the state level, with the exception of tribal lands, the California Environmental Protection Agency (CalEPA) and its sub-agencies, including the SWRCB, have been delegated primary responsibility for administering and enforcing certain provisions of the CWA. At the local level, the Central Coast RWQCB and the County have both enforcement and implementation responsibilities under the CWA.

Federal Antidegradation Policy

The federal Antidegradation Policy (40 Code of Federal Regulations 131.12), first included in EPA's regulations in 1983, is designed to protect water quality and water resources. The policy requires states to develop statewide antidegradation policies and identify methods for implementing them. State antidegradation policies and implementation measures must include the following provisions: (1) existing instream uses and the water quality necessary to protect those uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. State permitting actions must be consistent with the federal Antidegradation Policy.

4.10.2.2 State

Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act (first codified in the California Water Code Section 13000 et seq. in 1969) is the primary water quality control law for California. Whereas the CWA applies to all waters of the United States, the Porter–Cologne Act applies to waters of the state, which includes isolated wetlands and groundwater in addition to federal waters.[5] The act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. California Water Code Section 13260(a) requires that any person discharging waste or proposing to discharge waste, other than to a community sewer system, that could affect the quality of the waters of the state, file a Report of Waste Discharge with the applicable RWQCB. For discharges directly to surface water (waters of the United States), an NPDES permit is required, which is issued under both state and federal law; for other types of discharges, such as waste discharges to land (e.g., spoils disposal and storage), erosion from soil disturbance, or discharges to waters of the state (e.g., groundwater and isolated wetlands), WDRs are required and are issued exclusively under state law. WDRs typically require many of the same best management practices (BMPs) and pollution control technologies as are required by NPDES-derived permits.

California Antidegradation Policy

The California Antidegradation Policy, otherwise known as the Statement of Policy with Respect to Maintaining High Quality Water in California, was adopted by the SWRCB (State Board Resolution No. 68-16) in 1968. Unlike the federal Antidegradation Policy, the California Antidegradation Policy applies to all waters of the state, not just surface waters. The policy requires that, with limited exceptions, whenever the existing quality of a water body is better than

5 "Waters of the state" are defined in the Porter–Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code Section 13050[e]).

the quality established in individual basin plans, such high-quality water must be maintained and discharges to that water body must not unreasonably affect any present or anticipated beneficial use of the water resource. As stated in the Basin Plan, "discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State" (Central Coast RWQCB 2019).

Water Quality Control Plan for the Central Coastal Basin

The Porter-Cologne Water Quality Control Act sets forth the obligations of the SWRCB and RWQCBs to adopt and periodically update water quality control plans (Basin Plans), in which beneficial uses and water quality objectives are established, and which includes implementation programs and policies to achieve those objectives (California Water Code Sections 13240 through 13247). The 2019 *Water Quality Control Plan for the Central Coastal Basin* identifies 13 beneficial uses for Laguna Creek as follows: municipal and domestic supply; agricultural supply; industrial service supply; groundwater recharge; freshwater replenishment; water contact recreation; non-contact water recreation; commercial and sport fishing; cold fresh water habitat; wildlife habitat; migration of aquatic organisms; and spawning, reproduction, and/or early development. In addition to water quality objectives for surface waters, the Basin Plan also lists groundwater quality objectives for bacteria, chemical constituents, pesticides, radioactivity, salinity, tastes and odors, and toxicity. Of particular importance to the Proposed Project is the Basin Plan's water quality objective for turbidity, which states that an "increase in turbidity attributable to controllable water quality factors shall not exceed the following limits:

1. Where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20%.
2. Where natural turbidity is between 50 and 100 NTU, increases shall not exceed 10 NTU.
3. Where natural turbidity is greater than 100 NTU, increases shall not exceed 10% (Central Coast RWQCB 2019)."

Construction General Permit (SWRCB Order No. 2009-0009-DWQ, as Amended)

For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) to avoid and minimize water quality impacts attributable to such activities. The Construction General Permit applies to all projects in which construction activity disturbs 1 acre or more of soil. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling and excavation. The Construction General Permit requires development and implementation of a stormwater pollution prevention plan (SWPPP), which would specify water quality BMPs designed to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site. Routine inspection of all BMPs is required under the provisions of the Construction General Permit, and the SWPPP must be prepared and implemented by qualified individuals as defined by the SWRCB.

To receive coverage under the Construction General Permit, the project proponent must submit a Notice of Intent and permit registration documents to the SWRCB. Permit registration documents include completing a construction site risk assessment to determine appropriate coverage level; detailed site maps showing disturbance area, drainage area, and BMP types/locations; the SWPPP; and, where applicable, post-construction water balance calculations and active treatment systems design documentation. Because the Proposed Project would disturb less than 1 acre of land, compliance with the NPDES Construction General Permit is not required.

4.10.2.3 Local

County of Santa Cruz General Plan and Local Coastal Program

The Conservation and Open Space Element (Chapter 5) of the County of Santa Cruz General Plan and Local Coastal Program outlines policies and programs for the protection of surface water quality and prevention of erosion (County of Santa Cruz 2020). Table 4.11-1 in Section 4.11, Land Use and Planning, discusses applicable General Plan/Local Coastal Program policies related to hydrology and water quality.

4.10.3 Impacts and Mitigation Measures

This section contains the evaluation of potential environmental impacts associated with the Proposed Project related to hydrology and water quality. The section identifies the standards of significance used in evaluating the impacts, describes the methods used in conducting the analysis, and evaluates the Proposed Project's impacts and contribution to significant cumulative impacts, if any are identified.

4.10.3.1 Thresholds of Significance

The standards of significance used to evaluate the impacts of the Proposed Project related to hydrology and water quality are based on Appendix G of the CEQA Guidelines, as listed below. A significant impact would occur if the Proposed Project would:

A. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

B. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

C. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
   - i. Result in substantial erosion or siltation on or off site.
   - ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site.
   - iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
   - iv. Impede or redirect flood flows.

D. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

E. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

4.10.3.2 Analytical Methods

The following analysis considers whether the Proposed Project would directly or indirectly cause hydrologic and water quality impacts, taking into account the City's Standard Construction Practices (described in Section 3.6.3, Standard Construction Practices). The study area (including the study area for cumulative impacts) consists of the

7.8-square-mile Laguna Watershed, with the focus of the impact analysis being on the project site and all downstream receiving water bodies (i.e., middle and lower Laguna Creek and the coastal lagoon).

4.10.3.3 Project Impact Analysis

Areas of No Impact

The Proposed Project would not have impacts with respect to the following standards of significance as described below:

- **Groundwater Impacts (Significance Standards B and E).** The Proposed Project does not include use of a groundwater well for dewatering or other purposes, and there are no water supply wells on the site or in the immediate vicinity. Furthermore, there would be no interference with groundwater recharge because the modified Facility would not change the existing maximum diversion rate of 7 cfs, would not involve a volumetric increase in the City's water rights, and would continue to maintain the agreed upon in-stream flows of 2 cfs. The Proposed Project would enhance the ability of the Facility to fine-tune diversion rates at any given time, including the flexibility to divert water during high flows when water quality constraints currently prevent this under existing conditions (i.e., due to excessive turbidity). However, to the extent that surface flow within Laguna Creek recharges the underlying groundwater aquifer, such as in the low-gradient lower reaches of the creek, this change in the timing of diversions would not be sufficient to measurably reduce groundwater recharge. This is because the agreed upon in-stream flows of 2 cfs, besides supporting downstream aquatic habitat, also maintain the ability of the stream channel to support groundwater recharge. Because the Proposed Project is not within a DWR-designated groundwater basin, or a locally designated groundwater basin, there is no groundwater management plan or policy with which the Proposed Project could conflict. Therefore, the Proposed Project would have no impact on groundwater, either through decreases in groundwater availability, through interference with groundwater recharge, or by otherwise conflicting with or obstructing implementation of a sustainable groundwater management plan.
- **Pollutant Release due to Flood Hazard, Tsunami, or Seiche Zones (Significance Standard D).** As discussed above, there are no designated flood hazard zones on the project site or in the Laguna Watershed, and there are no tsunami or seiche hazards. The project site would naturally be subject to high flow events on Laguna Creek, but would not include an increase in the storage of hazardous materials. The existing 250-gallon aboveground propane tank used for the emergency backup generator, which is located along the main access road and outside of the Laguna Creek corridor, would continue to be stored on the site. Pollutants associated with construction-related materials, vehicles, and equipment would not be released as a result of flooding because construction would occur during the dry season. Because the Proposed Project would not affect the depth, extent, or frequency of flooding on site or downstream, and would not involve storage of hazardous materials or pollutants, there would be no impact with respect to this criterion.

Impacts

This section provides a detailed evaluation of hydrology and water quality impacts associated with the Proposed Project.

Impact HYD-1: Water Quality (Significance Standards A and E). The Proposed Project would not violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. ***(Less than Significant)***

Impacts to water quality through exceedance of water quality standards, non-conformance with WDRs, or by other means can potentially result from the short-term effects of construction activity (e.g., erosion and sedimentation due to land disturbances, uncontained material and equipment storage areas, improper handling of hazardous materials) and the long-term effects of operation of the retrofitted Facility (e.g., alteration of drainage patterns, use/handling of hazardous materials, and/or increases in impervious surfaces). This impact also covers the portion of Significance Standard E regarding conflict with or obstruct implementation of a water quality control plan. This analysis addresses the applicable Basin Plan objectives provided above.

Construction

Within the 2.1-acre project site, the construction of the Proposed Project would result in approximately ~~0.45~~0.51 acres of disturbance, approximately 0.01 acres of which would remain as the permanent footprint for the new intake structure, valve vault, diversion pipeline, access stairway, and riprap bank protection. The Proposed Project would include appropriate site restoration measures, including removal of the cofferdam and temporary bypass system, mobile office and any other temporary facilities installed prior to construction initiation; along with stabilization of disturbed soils using erosion controls such as hydroseeding, hand-seeding, and/or restoration plantings. Accordingly, the potential water quality impacts associated with construction disturbance areas would be limited to ~~the~~ a 3-month construction period, with initial activities planned to occur as early as March 2021 and in-stream activities during the dry season (June to October).

The primary potential pollutant of concern associated with construction activity is sediment (i.e., high turbidity) generated from site preparation, grading and excavation, and soil stockpile activities. Although Laguna Creek is not listed under CWA Section 303(d) as impaired for sedimentation/siltation, a measurable increase in sedimentation/siltation from construction activities on the site could temporarily violate Basin Plan objectives, if not properly controlled. In addition to sediment, other pollutants associated with construction activity could include heavy metals, oil/grease, fuels, debris/trash from construction-related materials, and concrete curing compounds. Sediment can also be a carrier for these pollutants if they are released to soils. Basin Plan objectives for organic contaminants (e.g., fuels, paints, solvents) are generally the same as their drinking water quality standards (i.e., MCLs), and the Basin Plan objectives for debris and certain other compounds are qualitative in nature, requiring that release of such pollutant sources not adversely impact the beneficial uses of Laguna Creek. The most sensitive beneficial use identified in the Basin Plan with respect to water quality is “cold freshwater habitat,” due to the presence of salmonid species in the creek’s lower reaches. Without adequate precautions, wind and/or rain events that occur during construction activities could generate pollutants and/or mobilize sediment such that they contribute to the water quality degradation of receiving waters and/or violate Basin Plan objectives.

The most intensive soil disturbance would occur during the initial phases of construction for each of the Proposed Project elements, including site preparation and earthmoving activities associated with access roads improvements, staging/laydown areas, installation of the temporary cofferdam and creek bypass system, removal of impounded materials to install the new Coanda screen intake structure, and installation of the valve vault, access stairs, and riprap bank stabilization. Approximately 10 cubic yards of material upstream of the dam would be temporarily excavated and returned its original location within the creek. Approximately 40 cubic yards of material would be excavated downstream of the dam with approximately 10 cubic yards reused on site and 30 cubic yards hauled off site.

Due to the Proposed Project's short-term construction ~~schedule~~ duration of approximately 3 months (primarily occurring during the low-flow period within Laguna Creek ~~(June to October~~) and implementation of City's Standard Construction Practices related to erosion control and water quality protection (i.e., standard water quality BMPs), potential impacts on water quality would be reduced. Although the potential for stormwater runoff would be low, rainfall occasionally occurs during the construction period, primarily in the later part of the construction window, between September and October. If a rain event were to occur, erosion of temporary soil stockpiles on the site or loose soils along the edge of excavated areas may result in discharges of sediment-laden stormwater runoff into Laguna Creek. In addition, short-term water quality impacts could occur as a result of mobilization of uncured concrete and/or other construction materials or debris.

As part of the City's Standard Construction Practices, which are included in the Proposed Project, the contractor would be required to implement water quality BMPs to avoid or substantially reduce the potential for pollutant contributions to Laguna Creek. These include the following, which are described in Section 3.6.3 and summarized below:

- Installation of erosion control BMPs consisting of construction site perimeter controls, stabilization of exposed soils and stockpiles, isolating spoil disposal sites and concrete wash sites from waterways or jurisdictional resources, installation of runoff control devices, and periodic inspection of BMPs including after rain events to verify they are functioning as intended and repaired/replaced if necessary (Standard Construction Practices #1 through #3 and #5);
- Implementation of wind erosion (dust) controls (Standard Construction Practice #4);
- Control of hazardous materials in a manner than prevents release to soil or surface water by establishing containment areas a minimum of 65 feet away from the active stream channel, with daily checks for vehicle fuel leaks, provision of spill kits, regular equipment inspections, and use of watertight containers and secondary containment (Standard Construction Practices #6 though #8);
- Keeping a tidy worksite and properly managing waste and trash (Standard Construction Practice #9);
- Measures to minimize work in the active channel and general in-stream disturbances, and appropriate restoration/revegetation activities (Standard Construction Practices #10 through #15); and
- Implementation of dewatering best management practices that minimizes the extent and duration of creek disturbances in any one location; captures and relocates aquatic vertebrates; maintains adequate flow upstream and downstream of coffer dams; avoids seepage; avoids discharge of dirt, dust, or other deleterious material; and returns the streambed to as close to pre-project condition as possible (Standard Construction Practices #17 through #23).

In addition, as described in the Basis of Design Report (B&V 2020a), a proposed 3-foot-high cofferdam and 12-inch bypass piping, designed to accommodate streamflows of 12 cfs, would be installed during construction to control potential increased streamflow associated with a rain event. The 3-foot-high cofferdam is deemed adequate for typical summer streamflows (B&V 2020a). Based on the data for average daily flows at Upper Laguna Creek Gaging Station, 12 cfs streamflow has only been exceeded three days during the ~~proposed~~ months ~~of~~ when in-stream construction would occur (June to October) ~~during~~ over the period data ~~has been~~ was collected at the project site (from October 1969 to October 1976 and October 2003 to September 2019). Specifically, from June 4 to June 6, 2011, the Upper Laguna Creek Gaging Station registered an average daily flow rate of 19 cfs and a maximum flow rate of 45 cfs (City of Santa Cruz 2019). Because this discreet stream flow event was an anomaly, stream overtopping of the cofferdam and associated erosion of sediments during a rainfall event during construction is not anticipated.

With implementation of the City's Standard Construction Practices pertaining to construction erosion control and installation of the cofferdam and bypass piping, the Proposed Project would have a less-than-significant impact related to water quality standards and waste discharge requirements and would not substantially degrade surface or groundwater quality.

Operation and Maintenance

The water quality effects of operation and maintenance of the Proposed Project would not differ substantially from existing conditions because the Facility would continue to be generally the same size and have the same capacity and purpose, while improving the City's ability to fine-tune diversions and manage sediment. The Coanda screen is designed to direct suspended sediment flows over the screen and turbidity of diverted water is low, maintaining sediment loads within the creek during high flow. Past observations have shown that untimely opening of the bypass valve may lead to downstream accumulations of sediment when the creek is unable to transport and distribute sediment effectively (i.e., during low flows) (Waterways Consulting, Inc. 2017). Operation of the proposed sediment blowoff valve would be managed so that sediment blowoff generally occurs during higher flows. In addition, the Proposed Project has been designed to minimize the sediment content of water diverted through the Coanda screen, which is expected to reduce the need for and frequency of sediment blowoff. As described in Chapter 3, Project Description, an adaptive management plan developed in collaboration with applicable resource agencies would guide the blowoff of minor amounts of sediment that could collect within the intake structure.

Hydraulic modeling analysis using computational fluid dynamics was completed for the Proposed Project to determine if undesirable or erosive hydraulic conditions could occur as a result of the proposed improvements (B&V 2020b). Through detailed comparison of flow velocities under several peak flow scenarios (corresponding to the 2-year, 100-year, and upper 95th percentile confidence limit of the 100-year flood event) under both existing and proposed conditions, it was determined that the Proposed Project would result in similar flow conditions downstream of the diversion structure. Specifically, under both existing and proposed conditions, high velocities and high levels of turbulence would occur immediately downstream of the dam during peak flow scenarios. The Proposed Project would not increase erosion or scour resulting from peak flow velocities due to the rocky geology of the project site. Therefore, during operation, the Proposed Project would have a less-than-significant impact with respect to water quality standards or waste discharge requirements and would not substantially degrade surface or groundwater quality.

Impact HYD-2: **Alteration of Drainage Patterns (Significance Standard C).** The Proposed Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on or off site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows. ***(Less than Significant)***

As discussed under Impact HYD-1, the Proposed Project would not substantially affect the hydraulics of the creek downstream of the dam because the Facility would retain the general size and elevation of the existing structure. The altered flow patterns under the Proposed Project are discussed in Impact HYD-1 above as they relate to water quality. As described above, hydraulic modeling indicates that the Proposed Project, including the minor incremental increase in impervious surfaces associated with the valve vault, access stairs, and riprap bank stabilization, would not substantially affect flow velocities compared to the existing conditions. The overall purpose of the riprap bank protection is to maintain existing flow patterns as they are, and avoid scour, which means that the feature functions to maintain the drainage pattern and course of the creek. The Proposed Project would not create new runoff or contribute to measurable increases in the rate or amount of runoff because the change in impervious surfaces would be negligible, and thus have a negligible effect on runoff, especially when considered in the context of typical flow conditions within the 7.8-square-mile watershed area. Therefore, the Proposed Project would have a less-than-significant impact with respect to alteration of drainage patterns.

4.10.3.4 Cumulative Impacts Analysis

This section provides an evaluation of cumulative hydrology and water quality impacts associated with the Proposed Project and other reasonably foreseeable future projects, as identified in Table 4.1-1 in Section 4.1, Introduction to Analysis, and as relevant to this topic. The geographic area of analysis for cumulative water quality impacts is the Laguna Watershed.

The Proposed Project would not contribute to cumulative impacts related to groundwater (Significance Standards B and E) and release of pollutants due to inundation by flood, tsunami, or seiche (Significance Standard D) because it would have no impact related to these standards, as described above. Therefore, these significance standards are not further evaluated.

Impact HYD-3: Cumulative Water Quality Impacts (Significance Standard A, C, and E). The Proposed Project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to water quality or alteration of drainage patterns. ***(Less than Significant)***

The known cumulative projects planned within the Laguna Watershed include the Santa Cruz Water Rights Project, the Laguna Pipeline portion of the North Coast System Repair and Replacement Project, and the Reggiardo Diversion upgrade identified in the Anadromous Fisheries Habitat Conservation Plan. No construction or development within the Laguna Watershed is proposed as part of the Santa Cruz Water Rights Project and therefore this project would not contribute to potential cumulative hydrology and water quality impacts in the watershed during construction. While the Laguna Pipeline and the Reggiardo Diversion upgrade would entail limited construction within the watershed, they would occur at least several years after construction of the Proposed Project and therefore would not result in significant cumulative impacts during construction of the Facility in the Laguna Watershed. Long-term benefits to water quality would result from implementation of the both the Proposed Project and the Reggiardo Diversion upgrade, which would provide sediment transport during high flows to avoid pulsing of sediment to downstream locations.

As indicated in Section 4.1, there are not any known substantive proposed or pending development projects in the Laguna Watershed that would be under the jurisdiction of the County. However, if any such projects are proposed they would be subject to County approval; such projects that require discretionary approval are assumed to be designed or otherwise conditioned to avoid and minimize impacts to hydrology and water quality. Similar to the Proposed Project, other future projects proposed in the Laguna Watershed would be required to implement construction water quality BMPs, either through implementation of a SWPPP, per the Construction General Permit, or through implementation of an Erosion and Sediment Control Plan required per County ordinances, if relevant. In the cumulative condition, the Laguna Watershed would remain largely undeveloped and would continue to yield creek flows with good water quality.

As described above, the impacts of the Proposed Project would be limited to potential water quality impacts during construction, which would be less than significant through application of the City's Standard Construction Practices. In addition, the Proposed Project would have limited impacts related to alteration of drainages; these impacts would also be less than significant. The impacts of the Proposed Project on hydrology and water quality would be temporary during construction and localized to the site. Therefore, the Proposed Project, in combination with the past, present, and reasonably foreseeable future projects in the Laguna Watershed, would result in less-than-significant cumulative impacts to hydrology and water resources, and no further mitigation measures are required.

4.10.3.5 Mitigation Measures

As described above, the Proposed Project would not result in significant hydrology and water quality impacts, and therefore, no mitigation measures are required.

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