3.7 Hydrology and Water Quality

This section identifies and evaluates issues related to surface water and groundwater hydrology, water quality, and flood hazards to determine whether the PCRP, including its revisions to the 2011 Creek Restoration Plan that are a component of the 2012 Reclamation Plan Amendment, would cause one or more new significant impacts or a substantial increase in the severity of one or more significant impacts previously disclosed and evaluated in the 2012 EIR. To do this, this analysis focuses on three things: (1) PCRP areas that are outside of the existing Reclamation Plan boundary (for which Grading Approval would be required); (2) PCRP areas within the Reclamation Plan boundary and within the 120-acre PCRA but outside of the PCRA's 49.2-acre disturbance area; and (3) more generally, whether the PCRP proposes work at greater intensity than previously considered in the 2012 EIR. As a result, Reaches 6–13 and Reaches 17 and 18 are key areas for evaluation.[1]

This section describes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment relative to the 2012 EIR. This analysis is based in part on information contained in the following technical reports prepared on behalf of Lehigh:

- Waterways Consulting, Inc., 2022. Permanente Creek Restoration Plan: Updated 90% Level Submittal, Design Basis Technical Memorandum, August 2022 (**Appendix C**).
- GEI Consultants, Inc., 2021. Aquatic Resources Report, Preliminary Delineation of Waters of the United States, Including Wetlands, November 2021 (**Appendix E2**).

The preparers of this Draft SEIR independently reviewed these reports and other materials prepared by or on behalf of Lehigh and determined that they can be relied on (in combination with other materials included in the formal record) in the preparation of this Draft SEIR. Public comments received by the County on the Notice of Preparation (**Appendix A**, *Scoping Report*) that are relevant to water resources included concerns that implementing the PCRP could degrade surface water quality by depositing sediment and other pollutants into Permanente Creek; result in altered streamflows in surface waters downgradient of the Project site, causing flood hazard risks; and contribute overburden or sediments from erosion on haul roads and spoil piles to surface waters. These considerations are addressed in this section.

3.7.1 Setting

3.7.1.1 Study Area

The "study area" for this analysis of potential impacts related to surface water and groundwater hydrology, water quality, and flood-related hazards consists of the Project site described in Section 2.3.2 of the Project Description and shown in **Figure 2-3**. It also includes Permanente

[1] See Section 2.4, *Correlation between 2012 EIR PCRA and the PCRP*, which correlates the restoration activities described and analyzed in the 2012 EIR with the restoration activities described in the PCRP and analyzed in this SEIR. Section 2.5, *Permanente Creek Restoration Plan*, details the PCRP's proposed activities on a reach-by-reach basis.

Creek downgradient of the Project site in the lower portions of the Permanente Creek watershed, as described in the environmental setting for the 2012 EIR's consideration of hydrology and water quality (Draft 2012 EIR Section 4.10.1.2, page 4.10-1 et seq.).

3.7.1.2 Environmental Setting

Section 4.10.1 of the Draft 2012 EIR described the environmental setting for the 2012 EIR's consideration of hydrology and water quality, including climate and precipitation (Section 4.10.1.1, page 4.10-1 et seq.); surface water hydrology, drainage, water quality, and flooding (Section 4.10.1.2, page 4.10-1 et seq.); and groundwater hydrology and groundwater quality (Section 4.10.1.3, page 4.10-17 et seq.). These descriptions remain accurate for purposes of this analysis of the PCRP except as supplemented below.

Boulder Removal

The County's conditions of approval (COAs) of the 2012 Reclamation Plan Amendment (see Appendix H to this SEIR) included COAs 38–41, which address water quality, reclamation, and restoration of Permanente Creek within the PCRA. COA 39 required the identification and removal of limestone boulders within the PCRA that previously dispersed into Permanente Creek as a result of mining operations, unless it is demonstrated that the boulders are not a significant source of selenium, and that removing the boulders would result in impacts on Permanente Creek habitat by destabilizing the creek channel or increasing the mobilization of sediment in surface waters. If all such circumstances were identified, the boulders would be allowed to remain in place, consistent with the "Best Management Practice for Removal of Limestone Boulders from Permanente Creek" defined in the 2012 Reclamation Plan Amendment (County of Santa Clara 2013).

In 2012, consistent with COA 39, the Permanente Quarry submitted a detailed survey that provided the County a detailed description of the location, size, and condition of boulders in the Permanente Creek corridor; documentation of the associated impacts on the creek that would result from removal of the boulders; and a water quality analysis that assessed the potential for the boulders to leach selenium into the waters of Permanente Creek (County of Santa Clara 2013). These submitted materials identified that removing the boulders would likely result in substantial stability impacts on the creek channel and that the boulders are not a significant source of selenium. These materials were peer reviewed by an independent third-party geologist and other technical consultants retained by the County, who concurred with these conclusions. After the evaluation of boulder removal associated with COA 39, it was determined that the identified boulders would remain in place. All other 2012 Reclamation Plan Amendment conditions of approval regarding creek restoration still apply (see Appendix H).

In 2013, the Permanente Quarry entered into a settlement agreement with the Sierra Club that extends beyond the 2012 Reclamation Plan Amendment COA. The settlement agreement was amended in 2016 to reflect the Project being considered here. The Amended Consent Decree (Appendix B) included provisions that boulders sourced from limestone-containing mine wastes or overburden not to be used as part of the PCRP. The boulders identified in the detailed survey

reside in the Material Removal Area; Lehigh would evaluate which boulders to use or remove as part of the PCRP in accordance with the provisions of the Amended Consent Decree.

Quarry Drainage and Surface Water Quality

The Draft 2012 EIR describes drainage patterns and water quality associated with the quarry area (Section 4.10.1.2, page 4.10-3 et seq.). At the time the Draft 2012 EIR was being written, water that drained to the quarry pit, including the majority of runoff from the West Material Storage Area, was pumped out of the pit and discharged directly to Permanente Creek. As described in the Draft 2012 EIR under "Surface Water Quality" (Section 4.10.1.2, page 4.10-4), an important characteristic of the Project area with respect to water quality is the leachability of various constituents, particularly selenium, from rocks at the site. In the vicinity of the quarry, previous investigations documented that the existing concentrations of total dissolved solids (TDS), sulfate, some metals including selenium and mercury, and suspended sediments are relatively high in stormwater and in Permanente Creek. Subsequent study has confirmed that mercury is not a concern.[2]

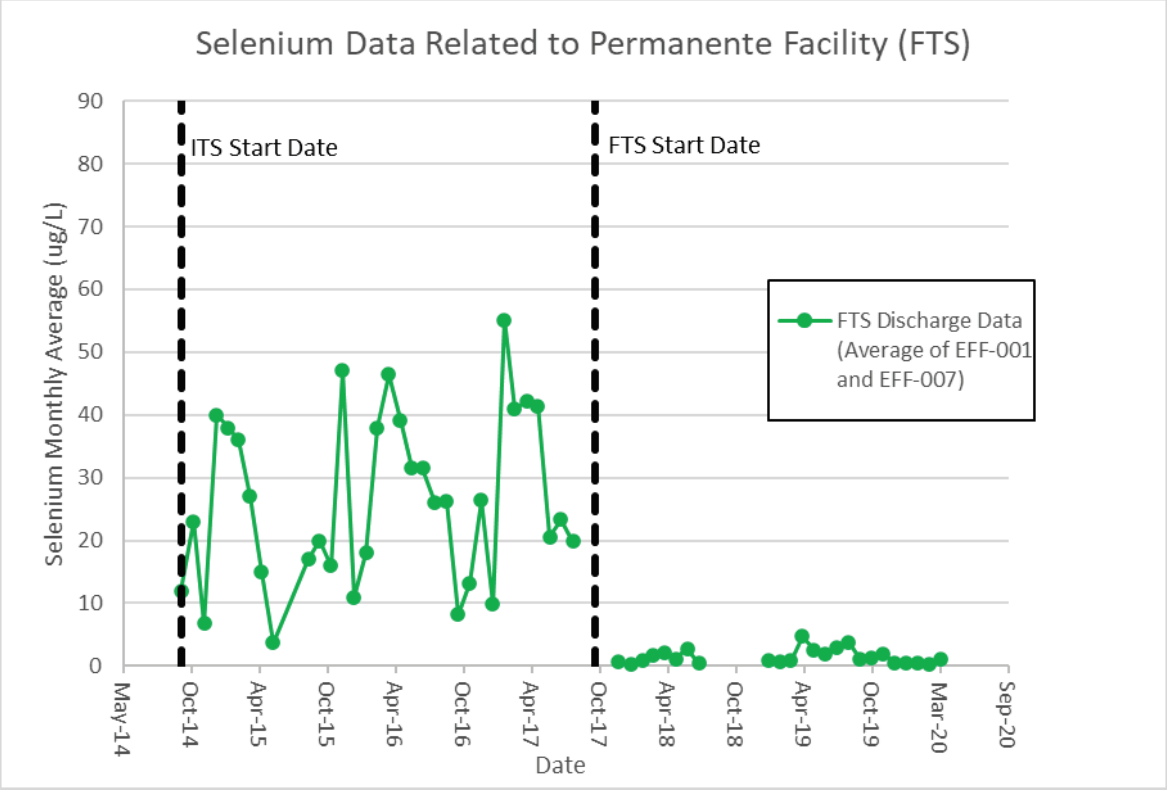
Permanente Creek is listed as impaired for diazinon, selenium, trash, and water toxicity on the 303(d) list of impaired water bodies for the waters within the region of the San Francisco Bay Regional Water Quality Control Board (RWQCB) (U.S. EPA 2021). Additionally, the upper Permanente Creek watershed has been documented as having a generally high sediment yield, in part because of historical activities associated with the quarry and the management of overburden storage. Current regulatory requirements and on-site controls largely control current inputs. Pursuant to the terms of the facility's National Pollutant Discharge Elimination System (NPDES) permit (Order No. R2-2019-0024, NPDES Permit No. CA0030210), the listed impairments, to the extent applicable to the upper Permanente Creek watershed (selenium and water toxicity), are being addressed via the discharge requirements contained therein (San Francisco Bay Regional Water Quality Control Board, 2019)

Since the County's certification of the 2012 EIR, and to comply with the requirements of the facility's NPDES permit and the associated Cease and Desist Order R2-2014-0011 as amended by the San Francisco Bay RWQCB through Order No. R2-2017-0031, Lehigh implemented significant infrastructure improvements to treat and control process and stormwater flows at the facility (process and/or stormwater flows related to the quarry, West Material Storage Area, East Material Storage Area, and cement plant) to reduce discharges containing selenium and other pollutants to Permanente Creek.

The facility's process water treatment system, called the Final Treatment System (FTS; an Upper FTS and Lower FTS location exist), treats all process and commingled stormwater flows at the facility and is effective at reducing pollutants, including selenium and other metals, to below numeric limits required by the quarry's NPDES permit. Before the FTS was installed, Lehigh

[2] Evaluation by the San Francisco Bay Regional Water Quality Control Board of discharge and receiving water samples as part of Lehigh's most recent National Pollutant Discharge Elimination System permit/waste discharge requirements (Regional Water Board Order No. R2-2019-0024) concluded that Lehigh needed no restrictions (e.g., discharge or other limits) on mercury, as all the levels (discharge and ambient background conditions) were below regulatory criteria.

installed an Interim Treatment System to provide partial treatment of quarry pit flows while optimizing the design for the FTS. Lehigh has also made improvements to drainage swales and enhanced stormwater controls on-site for the remaining stormwater discharge not sent to the FTS (e.g., the Pond 20 drainage area) (Lehigh 2018). Additionally, areas within the East Material Storage Area were covered with non-limestone materials and hydroseeded in 2015. Ongoing surface water quality monitoring at the quarry (Golder 2020a) demonstrates that, in general, on-site selenium concentrations in the stormwater runoff and slope-toe seeps have been decreasing since these other improvements (Sutro 2018). Baseline water quality at the facility and in Permanente Creek, especially downstream of Discharge Points EFF-001 (Upper FTS) and EFF-007 (Lower FTS) to Permanente Creek, are significantly improved overall (Figure 3.7-1) as compared to the description presented in the Draft 2012 EIR under "Surface Water Quality" (Section 4.10.1.2, page 4.10-4 et seq.).



NOTE: Any gaps in the data represent periods of no discharge. Routine water quality monitoring at National Pollutant Discharge Elimination System (NPDES) Discharge Points EFF-001 and EFF-007 have documented monthly average selenium concentrations ranging from less than 1 microgram per liter (µg/L) to Non-Detect, below the NPDES effluent limitation of 3.7 µg/L, from April 2018 to the most recently reported monitoring period in November 2021. The facility has not discharged from either of these locations since March 2020.

SOURCES: U.S. EPA 2022; Lehigh 2018.

Figure 3.7-1
Monthly Average Selenium Concentration in Quarry Discharges to Permanente Creek

3.7.1.3 Regulatory Setting

Section 4.10.1.4 of the Draft 2012 EIR (page 4.10-17 et seq.) described the regulatory setting for the analysis of potential impacts on hydrology and water quality, including federal, state, and local laws, regulations, plans and policies applicable to the analysis of the proposed creek restoration and other Project components that were considered in the 2012 EIR. The section summarized provisions of the Federal Emergency Management Agency (FEMA); the Clean Water Act, including the NPDES Program (Clean Water Act Section 402); the Porter-Cologne Water Quality Control Act; the Surface Mining and Reclamation Act; and County ordinances and other local plans, and policies. The description of the regulatory setting remains accurate for purposes of this analysis of the PCRP except as supplemented below.

State

NPDES Construction General Permit

The State of California adopted an NPDES construction general permit on September 2, 2009 (Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ) (Construction General Permit). The Construction General Permit regulates stormwater management at construction sites. Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, must obtain coverage under the general permit for discharges of stormwater associated with construction activity. The Project would be required to comply with the permit requirements to control stormwater discharges from the sites where Project elements are being constructed or implemented. Construction activity subject to the Construction General Permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation. Portions of the Project may fall under the Type 1 Linear Underground/Overhead Projects (or "LUP") category, which covers construction activities associated with the installation of underground linear facilities (such as pipelines and substructures), if the following conditions are met:

(1) Construction occurs on unpaved improved roads, including their shoulders or land adjacent to them.

(2) The areas disturbed during a single construction day are returned to their preconstruction condition, or to an equivalent condition (i.e., disturbed soils such as those from trench excavation are hauled away, backfilled into the trench, and/or placed in spoils piles and covered with plastic), at the end of that same day.

(3) Vegetated areas disturbed by construction activities are stabilized and revegetated at the end of the construction period.

(4) When required, adequate temporary soil stabilization best management practices (BMPs) are installed and maintained until vegetation has reestablished to meet the permit's minimum cover requirements for final stabilization.

In the study area, the Construction General Permit is implemented and enforced by the San Francisco Bay RWQCB, which administers the stormwater permitting program. To obtain coverage under this permit, project operators must electronically file permit registration

documents, which include a Notice of Intent, a Stormwater Pollution Prevention Plan (SWPPP), and other compliance-related documents. An appropriate permit fee must also be mailed to the State Water Resources Control Board (SWRCB).

The SWPPP identifies BMPs that must be implemented to reduce construction effects on receiving water quality based on potential pollutants. The BMPs identified are directed at implementing both sediment and erosion control measures and other measures to control potential chemical contaminants. In addition, the SWPPP must contain a visual monitoring program and a sediment monitoring plan if the site discharges directly to a water body listed on the Clean Water Act Section 303(d) list for sediment. Examples of typical construction BMPs include scheduling or limiting certain activities to dry periods, installing sediment barriers such as silt fence and fiber rolls, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing, and fueling. The SWPPP also describes the BMPs for reducing pollutants in stormwater discharges after all construction phases have been completed at the site (post-construction BMPs). Dischargers are responsible for notifying the RWQCB of violations or incidents of non-compliance, and for submitting annual reports identifying deficiencies of the BMPs and explaining how the deficiencies were corrected.

The Construction General Permit requires a site-specific risk-level assessment,[3] an active stormwater effluent monitoring and reporting program during construction (for Risk Level 2 and 3 sites), rain event action plans for certain higher risk sites,[4] and numeric effluent limitations for pH and turbidity. It also includes requirements for qualified professionals who prepare and implement the plan: The risk assessment and SWPPP must be prepared by a state-certified Qualified SWPPP Developer and SWPPP implementation must be overseen by a state-certified Qualified SWPPP Practitioner.

Individual NPDES Permit

Subsequent to the 2012 EIR, the facility obtained an individual facility-wide NPDES permit, NPDES Permit Number CA0030210, currently embodied in RWQCB Order Number R2-2019-0024 (Individual NPDES Permit). The facility has an updated SWPPP and Municipal Regional NPDES Stormwater Permit (Golder 2020b) that conform to the requirements in the Individual NPDES Permit. The SWPPP is intended to achieve two purposes:

(1) Identify and evaluate sources of pollution associated with industrial activities that could affect the quality of stormwater and authorized non-stormwater discharged from the facility.

(2) Identify site-specific BMPs that the facility must implement to minimize or prevent discharge of pollutants associated with industrial activities that may be in stormwater.

[3] The Construction General Permit defines three levels of risk that may be assessed for a construction site: Risk Levels 1, 2, and 3. Risk is calculated based on the "project sediment risk," which determines the relative amount of sediment that can be discharged given the project and location details, and the "receiving water risk" (the risk that sediment discharges pose to the receiving waters).

[4] Those sites that have a high potential for mobilizing sediment in stormwater and drain to a sediment-sensitive water body.

The SWPPP addresses elimination of non-stormwater discharges, pollutant sources and associated BMPs, stormwater management, sedimentation and erosion control practices, preventative maintenance and good housekeeping practices, spill prevention and response, inspections, recordkeeping, and employee training.

Anti-Degradation Policy

The SWRCB's Anti-Degradation Policy, known as the Statement of Policy with Respect to Maintaining High Quality Water in California (SWRCB Resolution No. 68-16), restricts degradation of surface water and groundwaters in circumstances specified by Resolution 68-16. Specifically, this policy protects water bodies where existing quality is higher than necessary for the protection of beneficial uses and requires that existing high quality be maintained to the maximum extent possible.

Under the Anti-Degradation Policy, any actions that can adversely affect water quality in high-quality surface waters and groundwaters must: (1) be consistent with maximum benefit to the people of California; (2) not unreasonably affect present and anticipated beneficial uses of the water; and (3) not result in water quality less than that prescribed in water quality plans and policies. Furthermore, any actions that can adversely affect surface waters of the United States are also subject to the federal Anti-Degradation Policy (Code of Federal Regulations Title 40, Section 131.12) developed under the Clean Water Act. Discharges from the Project that could affect surface water quality would be required to comply with both the state and federal anti-degradation policies, included as part of the NPDES permit requirements for point discharges.

California Fish and Game Code

The California Department of Fish and Wildlife (CDFW) is authorized, under Fish and Game Code Sections 1600–1616, to regulate activities that would substantially divert, obstruct the natural flow of, or substantially change rivers, streams, and lakes. CDFW's jurisdictional limits are defined in Fish and Game Code Section 1602 as the "bed, channel, or bank of any river, stream, or lake."

In practice, CDFW may exert authority over activities that would adversely affect any fish and wildlife resources associated with such features. The Fish and Game Code prohibits activities that would "deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake," or that would obstruct the flow or alter the bed, channel, or bank of a river or stream (including intermittent and ephemeral streams) where there may be substantial adverse effects on a fish or wildlife resource, unless the applicant provides a notification of lake or streambed alteration and enters into a Lake and Streambed Alteration Agreement (LSAA) with CDFW that includes measures to protect fish and wildlife resources.

3.7.2 Significance Criteria

Consistent with the County of Santa Clara Environmental Checklist and the version of the CEQA Guidelines Appendix G Environmental Checklist that was in effect at the time, Section 4.10 of

the 2012 EIR determined that the proposed 2012 Reclamation Plan Amendment, including creek restoration work within the PCRA, would have a significant impact if it would:

a) Violate any water quality standards or waste discharge requirements;

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

c) Substantially alter the existing drainage pattern of a 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 sedimentation on- or off-site;

d) Substantially alter the existing drainage pattern of a 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;

e) 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;

f) Otherwise substantially degrade water quality;

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or inundation by seiche, tsunami, or mudflow;

j) Be located in an area of special water quality concern (e.g., the Los Gatos or Guadalupe watershed);

k) Be located in an area known to have high levels of nitrates in well water;

l) Result in a septic field being constructed on soil where a high water table extends close to the natural land surface;

m) 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; or

n) Conflict with the *Water Collaborative Guidelines and Standards for Land Uses Near Streams* (Water Collaborative Guidelines).

Updates to the CEQA Guidelines Appendix G Environmental Checklist that were finalized in December 2018 made only non-substantive revisions to these significance criteria. Specifically, the criteria were revised to include a consideration of whether project inundation by floodwaters would result in the release of pollutants and whether implementation of a project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Accordingly, these criteria remain relevant to this SEIR's consideration of

whether the PCRP would cause any new significant impacts or a substantial increase in the severity of significant impacts than were disclosed in the 2012 EIR.

3.7.3 Direct and Indirect Effects

3.7.3.1 Methodology

The impacts of implementing the PCRP are evaluated for surface water hydrology and water quality impacts that may occur during Project construction and after the completion of the proposed restoration activities. Direct and indirect impacts on surface water hydrology and water quality could occur during on-land or in-water construction activities or after the completion of restoration activities, due to long-term effects related to the alteration of the Permanente Creek channel, bed, banks, and floodplain. The impact analyses determine whether and to what degree the Project could change the existing hydrology, water quality, and flooding conditions described in Section 3.7.1 and identify whether the Project would cause a new significant impact or a substantial increase in the severity of a significant impact than identified in the 2012 EIR. The severity of an impact is determined based on the significance criteria identified in Section 3.7.2.

Compliance with applicable federal, state, and local laws and regulations is incorporated into the analysis of impacts because such compliance is mandatory and the application of the associated protective measures (such as BMPs, monitoring and reporting plans, and corrective actions) is proven to minimize and/or avoid impacts on hydrology or water quality. Further, regulatory agencies with technical jurisdiction and authority for oversight would require adherence to regulatory requirements as a condition of Project or permit approval and would continue to enforce applicable requirements throughout the Project's construction and operation phases.

The analysis considers whether compliance with regulatory requirements designed to protect water resources would be adequate such that the Project would not cause a new significant impact or a substantial increase in the severity of a significant impact than identified in the 2012 EIR related to hydrology and water quality.

3.7.3.2 Baseline

Section 3.0.1, *Environmental Baseline*, explains that in the context of an SEIR, the CEQA baseline is adjusted such that the originally approved project is assumed. Therefore, the baseline used in this analysis to evaluate the impacts of the PCRP and alternatives consists of existing environmental conditions plus the 2012 Reclamation Plan Amendment and 2012 EIR, and the creek restoration plans evaluated therein.

For purposes of this analysis of potential impacts on hydrology and water quality, the baseline includes the area of existing surface mining disturbance and the approved extent of disturbance and reclamation, including mitigation measures and COAs imposed as part of the 2012 EIR and 2012 Reclamation Plan Amendment. This includes restoration of Permanente Creek within the 49.2-acre disturbance area identified within the PCRA. The baseline also includes the existing physical conditions of Permanente Creek, its adjacent riparian area, and drainage patterns within

the PCRA but outside the approved disturbance envelope, and existing physical conditions within the PCRP implementation area but outside the existing Reclamation Plan boundary.

3.7.3.3 Discussion of Criteria with No Impact on Hydrology or Water Quality

As set forth in Section 4.10.4 of the Draft 2012 EIR, criteria b), g), i), k), l), m), and n) were eliminated from more detailed consideration in the 2012 EIR for the reasons explained on Draft 2012 EIR pages 4.10-27 to 4.10-29. For the reasons explained there, and as supplemented below, these criteria also are not analyzed further in this SEIR.

Related to criterion n), although the PCRP includes new and additional work in and adjacent to Permanente Creek compared to that described in the 2012 EIR within the PCRA, implementation of the PCRP would not conflict with the *Water Collaborative Guidelines and Standards for Land Uses Near Streams* (County of Santa Clara 2007). The Water Collaborative Guidelines were developed collaboratively among the participating jurisdictions and stakeholders and do not represent a substantial departure from existing County policies and practices. Rather, they supplement, clarify, and provide information to the Water Collaborative Guidelines' users, such as the County, but do not impose any new regulatory requirements relevant to the PCRP.

Existing County policies, standards, discretionary permit requirements, and review procedures, including those under CEQA, are substantially consistent with the Water Collaborative Guidelines. Therefore, other than the issues addressed below in the context of the County's Environmental Checklist and the version of the Environmental Checklist that was in effect at the time of the 2012 EIR, no other aspects of the PCRP would conflict with the Water Collaborative Guidelines, and this issue is not discussed further.

3.7.3.4 Direct and Indirect Effects of the Project

The analysis in this section evaluates the potential significance of the change in the physical environment that would be caused by implementation of the PCRP relative to baseline conditions, compares that impact conclusion with the impact conclusion reached in the 2012 EIR regarding the same consideration, and then makes a determination as to whether the implementation of the PCRP would cause one or more new significant impacts or a substantial increase in the severity of significant impacts than were disclosed in the 2012 EIR. For the reasons discussed below, implementation of the PCRP would not cause a new significant impact or a substantial increase in the severity of a significant impact than was disclosed in the 2012 EIR.

Impact 3.7-1: Construction of the PCRP would not violate water quality standards, waste discharge requirements, or otherwise substantially degrade water quality.

This impact analysis corresponds to significance criteria a) and f) as set forth in Section 3.7.2 and addresses whether implementation of the PCRP would violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface water or groundwater quality such that a new significant impact, or a substantial increase in the severity of a significant impact than identified in the 2012 EIR, would occur. In the context of Impact 4.10-2 (page 4.10-

42 et seq.), the 2012 EIR concluded that interim activities proposed within the PCRA would involve active ground disturbance by excavation, grading, stockpiling, hauling, and conveyor operation. Such activities have the potential to produce runoff, to be subject to erosion, and to discharge sediment and other pollutants to Permanente Creek. Sediment control BMPs would be implemented as needed in accordance with the drainage plan and SWPPP, but more rigorous control would be necessary to avoid introducing sediment, waterborne selenium, and TDS into the drainage channels, desiltation basins, and Permanente Creek. However, implementation of Mitigation Measures 4.10-2a and 4.10-2b would reduce the impact to a less-than-significant level by requiring the aggressive use of interim BMPs to protect areas that are disturbed, temporarily inactive, and partially reclaimed from stormwater runoff and erosion. For the reasons discussed below, the PCRP would cause **no new significant impact** and **no substantial increase in the severity of a significant impact** than was disclosed in the 2012 EIR for significance criteria a) and f).

Project construction would include staging of construction equipment and material, earthwork, demolition and removal of existing in-channel features (such as culverts and pond impoundments), channel realignment, placement of fill and gravels, vegetation removal, and riparian planting. Stormwater runoff from disturbed soils associated with construction activities is a common source of pollutants (mainly sediment) introduced to receiving waters. Earthwork can render soil and sediments more susceptible to erosion from stormwater runoff, causing these materials to migrate in stormwater runoff to downgradient water bodies. In addition, Project construction could involve the use of various materials typically associated with construction activities, such as solvents, oil and grease, and petroleum hydrocarbons. If handled in a manner inconsistent with manufacturer recommendations or safety recommendations and requirements, these materials could be inadvertently released, mobilized, and transported off-site by stormwater runoff.

As described in Section 2.5.6, *Vegetation and Erosion Protection*, and Section 2.5.9, *Best Management Practices and Applicant-Proposed Measures*, BMPs and applicant-proposed measures (APMs) would help avoid or minimize impacts related to water quality. Additionally, because the PCRP exceeds 1 acre in size, Lehigh would be required to comply with the Construction General Permit and to prepare a SWPPP describing the BMPs it must implement to control potential water quality pollutants and prevent or minimize erosion and sedimentation. The BMPs are designed to prevent pollutants from contacting stormwater, to contain erosion, and prevent stormwater pollutants generated during construction on-site from entering off-site receiving waters.

Typical BMPs include the placement of fiber rolls or gravel barriers to detain small amounts of sediment from disturbed areas, and temporary or permanent covering of stockpiles to prevent rainfall from contacting the stockpiled material. In addition to erosion control BMPs, SWPPPs include BMPs for preventing the discharge of pollutants other than sediment (e.g., paint, solvents, concrete, petroleum products) to downstream waters. BMPs for pollutants include conducting routine inspections of equipment for leaks, maintaining and managing material containers to ensure that they are intact and clearly labeled, and ensuring that construction materials are disposed of in accordance with applicable regulations. Under the provisions of the Construction General Permit,

the state-certified QSD is responsible for determining the site's risk level for sediment transport, developing the SWPPP, and managing its implementation. Compliance with the Construction General Permit is required by law and has proven effective in protecting water quality at construction sites.

Further, the Project would be required to obtain a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers, a Clean Water Act Section 401 water quality certification from the San Francisco Bay RWQCB, and a Fish and Game Code Section 1600 LSAA from CDFW before initiating any construction activities. These permits require targeted avoidance and minimization measures, performance standards, and implementation of BMPs that are specific to construction within and adjacent to stream channels, floodplains, and the riparian zone. Typical requirements include minimizing vegetation removal, using hand tools to reduce soil disturbance for earthwork on or near steep slopes, restricting vehicle refueling or maintenance within stream channels, implementing erosion and control measures, diverting runoff from steep erodible areas to stable locations, and implementing seasonal work windows to avoid construction within flowing waters.

Summary

Compliance with the requirements of the Construction General Permit, Section 404 Clean Water Act permit, Section 401 water quality certification, and Section 1600 LSAA, in addition to implementation of the BMPs and APMs proposed as part of the Project, would avoid or minimize the discharge of pollutants to surface waters or groundwater, and would minimize or eliminate potential degradation of surface water or groundwater quality during construction of the Project. For example, consistent with the recommendation made in the *Permanente Creek Restoration Plan Updated 90% Level Submittal Design Basis Technical Memorandum* (90% Design Memo) (Appendix C) and as stated in BMP-8 in Section 2.5.9.1, of Chapter 2, *Project Description*, Lehigh would conduct construction activities only during the summer months when Permanente Creek flow and precipitation is typically at a seasonal low, reducing the potential for storm runoff–based erosion and the transport of sediment to downstream waters. Therefore, the PCRP would cause **no new significant impact** and **no substantial increase in the severity of a significant impact** than was disclosed in the 2012 EIR related to the violation of water quality standards, waste discharge requirements, or the degradation of water quality.

> **Baseline Mitigation from 2012 EIR:** Mitigation Measures 4.10-1a: and 4.10-1b. The text of each is provided in Draft SEIR Table H1, *Impacts and Mitigation Measures for the 2012 Permanente Quarry Reclamation Plan Amendment*.
>
> **Additional Mitigation:** None required.

Impact 3.7-2: The PCRP would not substantially alter existing drainage patterns, including through the alteration of Permanente Creek, in a manner that would result in substantial erosion, sedimentation, or additional sources of polluted runoff.

This impact analysis corresponds to significance criteria c) and e) as set forth in Section 3.7.2 and addresses whether alterations to Permanente Creek, including the bed, banks, channel alignment, floodplain, riparian zone, and adjacent slopes and access roads, would alter the hydrologic regime along Permanente Creek such that substantial erosion and/or sedimentation occurs, including as a result of slope instability. In the context of Impact 4.10-3 (page 4.10-47 et seq.), the 2012 EIR analysis determined that the actions proposed for the PCRA would result in a less-than-significant impact because they would stabilize slopes adjacent to the creek; remove active sources of sediment, selenium (i.e., removal of limestone boulders), and TDS; revegetate eroded soil areas; remove instream structures; and regrade and restore the creek within several reaches. For the reasons discussed below, the PCRP would cause **no new significant impact** and **no substantial increase in the severity of a significant impact** than was disclosed in the 2012 EIR for significance criteria c) and e).

After the completion of the PCRP, the improved and restored channel of Permanente Creek would cause the creek to follow a new course. Depending on the change in the water surface slope, the geometry of the altered channel bed and banks, and the establishment of floodplain areas, an increase in flow depth within Permanente Creek could translate to an increase in flow velocity and a subsequent increase in the channel's capacity to erode and mobilize bed and bank sediments (hydromodification). Understanding sediment transport and the conditions under which sediment is deposited or eroded from altered streams is important to understanding and managing hydromodification, erosion, and sedimentation. The 90% Design Memo (Appendix C) describes in detail the model analyses conducted to inform the design of the PCRP such that hydromodification-related impacts are avoided, as summarized in the following discussion.

The PCRP has been designed to ensure channel stability and maintain the continuity of natural sediment transport within the improved and restored channel it would establish in Permanente Creek. Also, floodplain areas constructed as part of the PCRP would create depositional zones for sediment to reduce sediment transport and improve water quality as compared to the baseline.

Pre- and post-Project channel hydraulics were modeled as part of Project design development to ensure channel stability (Appendix C), including during the years immediately after construction while vegetation is becoming established and exposed soils have a greater potential for erosion. Channel hydraulics were modeled using Hydrologic Engineering Center River Analysis System (HEC-RAS) 5.0.4 river analysis software[5] under a range of flow regimes (1.5-year, 10-year, and 100-year flows). HEC-RAS results confirmed that appropriate bankfull channel dimensions were incorporated into PCRP designs based on drainage areas and watershed characteristics. Model results were also used to evaluate the sizing of streambed gravels (e.g., engineered streambed material), and channel stability and erosion protection. Based on the HEC-RAS modeling, surface treatments and grade control elements have been incorporated into the PCRP design to minimize

[5] HEC-RAS river analysis software was developed by the U.S. Army Corps of Engineers and is a standard model used for such assessments.

and/or avoid episodic or chronic releases of sediments to the creek during Project implementation. A full description of the design elements is presented in Appendix C; those relevant to erosion, sedimentation, and water quality are summarized below:

(1) **Use of engineered streambed material[6] (ESM) as channel substrate where the bed is reconstructed, consistent with CDFW design guidelines.** ESM would be mixed based on engineering requirements incorporated into the Project design and placed in appropriate locations to look and behave like a natural streambed (see Appendix C, Sheet C36). The ESM material has been designed to remain stable during the 100-year recurrence interval flow, with only minor adjustments to channel shape in reaches with bed slopes less than approximately 6–8 percent. In steeper reaches, the ESM is designed to adjust as occurs naturally in streams to form new pools and altered step geometry in response to flood flows.

(2) **Use of floodplain armor to protect newly constructed floodplain surfaces.** The floodplain armor has been sized similarly to ESM, using CDFW design guidelines, and is designed to be stable under design flood flows while providing appropriately sized material to enhance constructed floodplain habitats. Sufficient fine material has been included to ensure that vegetation can establish. As with the ESM, the floodplain armor has been designed to remain stable during a 100-year flood event.

(3) **Use of vegetated rock slope protection, including boulders of a specified gradation with live stakes[7] to protect newly constructed streambanks that are steeper than 2:1 horizontal:vertical (H:V)**. Rock slope protection is proposed to provide channel stability at the removal areas for Culverts #7 and #9, where the south bank would be left in an over-steepened condition after culvert removal, and where the floodplain bench conforms to the inlet of Culvert #6 at the downstream end of the Channel Widening Area.

(4) **Use of boulder sills.** Boulder sills would periodically extend across the proposed floodplains to serve as grade control if significant erosion were to occur along floodplain areas.

(5) **Use of boulder weirs**. Weirs would be incorporated into the ESM and keyed into the floodplain armor to provide grade control at locations of energy dissipation where channel flow plunges into pools.

(6) **Rapidly establishing vegetation.** In disturbed work areas, vegetation that can rapidly establish roots would be used to stabilize soils and reestablish a dense riparian canopy. Vegetation, including live stakes, container plants, and seeding, would be established to provide rooting strength to help reinforce substrate along the channel, at floodplain and riparian areas, and on newly constructed creek banks. Revegetation would also be the primary means of erosion control on slopes above the limits of floodplain armor (i.e., 10-year water surface). These areas would be seeded and planted.

(7) **Erosion control BMPs.** Although revegetation would be the primary means of erosion control, mulch, erosion control fabric and fiber rolls, and sediment barrier fencing would also be used while vegetation becomes established and/or as appropriate, pending constructed geometry and on slopes over 2.5:1 (H:V).

6 ESM refers to a well-graded mixture of boulders, cobble, gravel, sand, and fines, proportioned in a way that is stable under design flood flows and still meets habitat enhancement goals.

7 "Live stakes" are live plant cuttings, typically taken from willows, capable of regenerating into mature plants.

Further, although the PCRP ultimately would reduce erosion and sedimentation, some minor erosion of fine sediment would occur in the first year as vegetation becomes established. PCRP implementation would be phased (see Section 2.5.7, *Construction Sequencing*), so the area of potential short-term erosion would be limited in any given year.

In 2022, Golder Associates (Golder) assessed the potential for PCRP implementation to result in water quality impacts from polluted runoff caused by the leaching of selenium, molybdenum, and other metals after the use of on-site materials as backfill and the exposure of natural bedrock[8] as part of channel restoration (see Appendix G3). Sampling and geochemical analysis of the materials proposed for use as fill indicates that they have a low potential to leach selenium and other metals at levels above surface water or groundwater quality standards, and that such materials are therefore suitable for use as fill material and would not cause water quality to exceed regulatory standards or waste discharge requirements. Further, the results of Golder's water quality analysis (Appendix G3) determined that the removal of overlying material and the exposure of existing bedrock (primarily greenstone and Santa Clara Formation deposits) for the restored creek channel would not contribute to an increase of instream concentrations of constituents of concern (i.e., selenium and metals). Additionally, the primary area where limestone would naturally remain, e.g., Reach 18, would consist of non-disturbed bedrock, which, as demonstrated by upstream conditions, is not expected to contribute metals to the water column. Therefore, significant changes in the natural system would not occur and new source material would not be exposed to potentially undergo oxidation and mobilization of selenium based on the limestone bedrock present.

Although the creation of floodplain benches would allow for significant sediment storage within the PCRP reaches, sediment mobilized from Project areas or areas outside the influence of the Project may accumulate in unanticipated locations within the reconstructed channel segments. Such an accumulation could lead to on- or off-site erosion or sedimentation. To address this, Lehigh would evaluate areas of significant aggradation[9] as part of the monitoring and adaptive management program (see Section 2.5.8, *Monitoring and Adaptive Management*). In addition, corrective measures would be proposed to ensure that sediment and/or debris does not accumulate at locations that could affect Project stability. Lehigh would inspect each PCRP reach during the first year after construction following storms that deliver 1.5 inches or more of rainfall. If erosion or sedimentation does occur, the cause would be evaluated and adaptive management practices would be developed to help stabilize the area. The default approach at areas of erosion would be the installation of additional vegetation.

The 2012 EIR concluded that reclamation activities proposed within the PCRA would be an overall improvement to the hydrologic regime along Permanente Creek and would reduce erosion and sediment transport, improve water quality, and create greater long-term slope stability, thereby minimizing sediment sources. The 2012 EIR stated that the PCRP would remove soils,

8 Natural bedrock consists of limestone, greenstone, graywacke, Santa Clara Formation, and undisturbed soil/colluvium. See Section 3.5, *Geology and Soils*.

9 Aggradation is the process by which sediment is built up over time in a river system due to the deposition of sediment in areas in which the supply of sediment is greater than the amount of material that the system is able to transport.

rock, and overburden that may contain limestone from the creek channel, and posited that the removal activities might be a major source of selenium within Permanente Creek. Given the Project controls discussed in other sections of this SEIR, removal activities are not expected to be a significant source of selenium. Further, removal of the material from the creek channel could result in a slight improvement to receiving water quality in Permanente Creek. Consequently, the PCRP is not expected to be a significant source of selenium within Permanente Creek. Further, the PCRP would result in reduced erosion and sediment transport, reducing the exposure of selenium-bearing soils eroded and transported under low- and high-flow (i.e., flood flow) scenarios.

Based on the Project-proposed specific design elements and construction techniques described above, implementation of the PCRP would cause **no new significant impact** and **no substantial increase in the severity of a significant impact** than was disclosed in the 2012 EIR relating to the alteration of drainage patterns in a manner which would result in substantial erosion, sedimentation, or additional sources of polluted runoff.

Baseline Mitigation from 2012 EIR: None required.

Additional Mitigation: None required.

Impact 3.7-3: The PCRP would not substantially alter existing drainage patterns, including through the alteration of Permanente Creek, such that conveyance capacity is exceeded and flooding on- or off-site occurs.

This impact analysis corresponds to significance criteria d) and e) as set forth in Section 3.7.2 and addresses whether alterations to the Permanente Creek bed, banks, channel alignment, floodplain, riparian zone, and adjacent slopes and access roads would alter the hydrologic regime along Permanente Creek to such a degree that flooding occurs on- or off-site. In the context of Impact 4.10-4 (page 4.10-48 et seq.), the 2012 EIR analysis determined that the actions proposed for the PCRA would not increase 100-year flows in Permanente Creek. Further, Mitigation Measure 4.10-4 in the 2012 EIR requires Lehigh to design and construct detention facilities that would manage increased runoff, reduce excessive discharges to Permanente Creek, and develop the capacity to detain and release the 100-year flow, using on-site detention ponds to ensure that off-site, downstream flows do not cause an increased flooding risk or result in hydromodification. Lehigh remains subject to Mitigation Measure 4.10-4 and the PCRP would not conflict with the implementation of Mitigation Measure 4.10-4.

Under existing conditions, the quarry pit captures drainage from 361.5 acres. Pit water can be pumped to Permanente Creek via the Upper and Lower FTS at an approved maximum discharge of 6.2 cubic feet per second pursuant to the current NPDES permit (Order No. R2-2019-0024, Permit No. CA0030210). This condition is proposed to continue through Phase 1 of the 2012 Reclamation Plan Amendment, including the implementation of restoration activities in the PCRA. As described in Section 4.10.1.4 of the Draft 2012 EIR (page 4.10-17 et seq.), with respect to conveyance capacities, the *Santa Clara County California Drainage Manual* (Drainage

Manual) (see Draft 2012 EIR, page 4.10-26) requires that new stormwater drainage systems and channels be designed to convey the 10-year storm without surcharge, and to safely convey the 100-year flow. The Drainage Manual identifies multiple design standards, methods of analyses, and engineering tools required for the planning and design of stormwater drainage systems and flood control facilities within the county. The hydrologic analyses presented in the 2012 EIR are consistent with the Drainage Manual. For the reasons discussed below, the PCRP would cause **no new significant impact** and **no substantial increase in the severity of a significant impact** than was disclosed in the 2012 EIR for significance criteria d) and e).

The PCRP was designed with the HEC-RAS 5.0.4 river analysis hydrologic model to verify that channel dimensions are appropriately sized to convey flood flows and remain stable under a range of flow regimes (1.5-year, 10-year, and 100-year flows), and to confirm that bankfull channel dimensions are adequate so that infrastructure and access roads remain stable in 100-year flood flows. The results of hydrologic modeling are presented in the 90% Design Memo (Appendix C). Based on the model analysis and design, the PCRP would benefit Permanente Creek by increasing hydraulic capacity. Construction of broader and more functional floodplains and the removal of culverts and other instream structures would increase hydraulic capacity, provide additional storage of extreme flood flows, and increase the sediment storage capacity and attenuate the downstream transport of sediment during extreme flood events. The proposed design would not significantly alter depth or velocities in downstream reaches. There would be no substantial change in runoff flow rates because neither the drainage pattern of the tributary area nor the volume of flows within the channel would be altered. Therefore, there would be no substantial increase in the rate or volume of surface runoff or instream flows as compared to that disclosed in the 2012 EIR. For these reasons, the PCRP would cause **no new significant impact** and **no substantial increase in the severity of a significant impact** related to the alteration of drainage that could cause on- or off-site flooding.

> **Baseline Mitigation from 2012 EIR:** Mitigation Measure 4.10-4, the text of which is provided in Draft SEIR Table H1, *Impacts and Mitigation Measures for the 2012 Permanente Quarry Reclamation Plan Amendment*.
>
> **Additional Mitigation:** None required.

Impact 3.7-4: The PCRP would not place structures that would impede or redirect flood flows within a 100-year flood hazard area.

This impact analysis corresponds to significance criterion h) as set forth in Section 3.7.2 and addresses whether implementing the PCRP would impede or redirect flood flows associated with a 100-year flood event. In the context of Impact 4.10-4 (Final 2012 EIR, page 3.1-43 et seq.), the 2012 EIR concluded that interim reclamation activities proposed within the PCRA would not increase 100-year flood flows or increase flood risks related to the 100-year flood event as compared to the baseline level through Phase 1 of the 2012 Reclamation Plan Amendment. For the reasons discussed below, the implementation of restoration activities as described in the

PCRP would cause **no new significant impact** and **no substantial increase in the severity of a significant impact** than was disclosed in the 2012 EIR for significance criterion h).

As described in the Draft 2012 EIR (Section 4.10.1.2, page 4.10-16), FEMA is responsible for mapping areas subject to flooding during a 100-year flood event (i.e., a flood event that has a 1 percent chance of occurring in a given year). According to FEMA, and as described in the Draft 2012 EIR, the 100-year flood hazard zone for Permanente Creek extends upstream to, and includes, Reach 6 and Reach 7 (the "Concrete Channel Area") (Draft 2012 EIR Figure 4.10-1, page 4.10-2). Within and near Reaches 6 and 7, the 100-year flood hazard zone for Permanente Creek is relatively narrow, extending 200–300 feet across. As described in Section 2.5.1, within Reaches 6 and 7, Lehigh would plant native riparian vegetation and trees on the southern bank along the concrete channelized portion of Permanente Creek to improve shading and reduce vegetation growth within the channel to improve sediment transport and enhance fish passage. The development of a mature riparian canopy along the southern bank of the creek in the upland slopes above the concrete channel is proposed to shade the concrete channel, and thus to reduce solar heat gain on instream flow and discourage the establishment of cattails. Accordingly, implementation of the PCRP would not include the placement of structures within a 100-year flood hazard area. Additionally, the reduction of vegetation, such as cattails, within the Permanente Creek channel would improve flood conveyance capacity. Therefore, the PCRP would cause **no new significant impact** and **no substantial increase in the severity of a significant impact** than was disclosed in the 2012 EIR related to redirecting flood flows associated with a 100-year flood hazard area.

> **Baseline Mitigation from 2012 EIR:** Mitigation Measure 4.10-4, the text of which is provided in Draft SEIR Table H1, *Impacts and Mitigation Measures for the 2012 Permanente Quarry Reclamation Plan Amendment*.
>
> **Additional Mitigation:** None required.

3.7.4 Cumulative Effects

The Draft 2012 EIR analyzed potential cumulative effects in Section 6.2.10, *Hydrology and Water Quality* (page 6-23 et seq.). Revisions to the analysis presented in the Final 2012 EIR in Section 4.2.7 (pages 4-22 and 4-23) concluded that the 2012 Reclamation Plan Amendment, including creek restoration within the PCRA, would not result in a cumulatively considerable contribution to any significant cumulative effect. For the reasons discussed below, the PCRP would cause **no new significant impact** and **no substantial increase in the severity of a significant impact** in the cumulative context than was disclosed in the 2012 EIR.

As described in the 2012 EIR, the two primary impacts relevant to cumulative impacts from PCRP implementation are water quality and changes to drainage patterns that cause hydromodification and/or on- and off-site flooding.

Project construction activities would be consistent with the Construction General Permit; compliance is required by law, and the provisions of the permit and BMPs for the construction and post-construction phases have proven effective in protecting water quality at construction sites and downgradient receiving waters. NPDES general permits are designed to establish the regulatory requirements for a broad range of construction activities under differing site conditions with similar discharge characteristics (SWRCB 2012). A standard set of permit requirements prescribed via the Construction General Permit provides effective protection of water resources and ensures compliance with water quality standards for discharges of stormwater from construction sites with common receiving waters.

In this way, the Construction General Permit addresses cumulative discharges and/or pollutants arising from construction sites throughout the state. For example, two adjacent construction sites would be required to implement BMPs to reduce and control the release of sediment and/or other pollutants in any runoff leaving their respective sites. The runoff water from both sites would be required to achieve the same action levels, measured as a maximum amount of sediment or pollutant allowed per unit volume of runoff water. Thus, even if the runoff waters were to combine after leaving the sites, the sediments and/or pollutants in the combined runoff would still be at concentrations (amount of sediment or pollutants per volume of runoff water) below action levels and would not combine to cause any cumulatively considerable contribution to any significant cumulative effect.

After construction, the PCRP would result in an overall improvement to the hydrologic regime along Permanente Creek and in a reduction of erosion and sediment transport, water quality improvements, and greater long-term slope stability, which would reduce sediment sources. The PCRP additionally would benefit Permanente Creek by increasing hydraulic capacity. Construction of broader, more functional floodplains and the removal of culverts and other instream structures would increase hydraulic capacity, provide additional storage of extreme flood flows, increase sediment storage capacity, and attenuate the downstream transport of sediment during extreme flood events. The proposed design would not significantly alter depth or velocities in downstream reaches and would reduce the potential for on- or off-site flooding as compared to existing conditions. Through the implementation of BMPs, surface treatments, PCRP design elements, and monitoring and adaptive management (described in Sections 2.5.6 through 2.5.9), the Project's incremental contribution to sedimentation, hydromodification, flooding, and flood hazards would not be cumulatively significant.

For these reasons, implementation of the PCRP would not create any new significant impact or a substantial increase in the severity of a significant cumulative impact to hydrology or water quality than was disclosed and evaluated in the 2012 EIR.

3.7.5 References

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