

MITIGATION AND MONITORING REPORTING PROGRAM

Santa Clara Valley Water District Stream Maintenance Program Update Draft Subsequent Environmental Impact Report

Introduction

This Mitigation Monitoring and Reporting Program (MMRP) has been prepared pursuant to State of California Public Resources Code Section 21081.6, which requires adoption of a MMRP for projects in which the lead agency has required changes or adopted mitigation to avoid significant environmental effects. The Santa Clara Valley Water District (SCVWD) is the lead agency for the proposed Stream Maintenance Program (SMP) Update (SMP Update or Proposed Project) and, therefore, responsible for administrating and implementing the MMRP. The decision-makers must define specific reporting and/or monitoring requirements to be enforced during SMP Update implementation, before final approval of the Proposed Project. The primary purpose of the MMRP is to ensure that the mitigation measures identified in SCVWD's Final Subsequent Environmental Impact Report (FSEIR) are implemented to reduce or avoid identified environmental effects.

The purpose of discussing the MMRP in the Draft SEIR (DSEIR) is to appropriately assign the mitigation responsibilities for implementing the Proposed Project. The mitigation measures listed in the MMRP are required by law or regulation and will be adopted by SCVWD as a condition of the primary SMP Update approval.

Mitigation is defined by the California Environmental Quality Act (CEQA), Section 15370 as a measure that:

- avoids the impact altogether by not taking a certain action or parts of an action;
- minimizes impacts by limiting the degree or magnitude of the action and its implementation;
- rectifies the impact by repairing, rehabilitating, or restoring the impacted environment;
- reduces or eliminates the impact over time by preservation and maintenance activities during the life of the action; and
- compensates for the impacts by replacing or providing substitute resources or environments.

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Mitigation measures provided in this MMRP were initially identified in Chapter 3, Environmental Setting and Impact Analysis of the DSEIR, as feasible and effective in mitigating Proposed Project-related environmental impacts. As a result of comments received during public review of the DSEIR, these mitigation measures will be revised and other mitigation measures may be added, as necessary.

Basis for the Mitigation Monitoring and Reporting Program

The legal basis for the development and implementation of the MMRP lies within CEQA (including the California Public Resources Code). Sections 21002 and 21002.1 of the California Public Resources Code state:

- Public agencies are not to approve projects as proposed if there are feasible alternatives or feasible mitigation measures available that would substantially lessen the significant environmental effects of such projects; and
- Each public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so.

Section 21081.6 of the California Public Resources Code further requires that the public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance with mitigation measures during project implementation. The monitoring program must be adopted when a public agency makes its findings under CEQA so that the program can be made a condition of project approval in order to mitigate significant effects on the environment.

Mitigation Monitoring and Reporting Program Procedures

The MMRP for the Proposed Project will be in place through all phases of the SMP Update. SCVWD shall have primary responsibility for administering the MMRP activities of staff, consultants, or contractors. SCVWD has the responsibility of ensuring that monitoring is documented through periodic reports and that deficiencies are promptly corrected. SCVWD's designated environmental monitor will track and document compliance with mitigation measures, note any problems that may result, and take appropriate action to remedy problems. Specific responsibilities of SCVWD will include:

- coordination of all mitigation monitoring activities;
- management of the preparation, approval, and filing of monitoring or permit compliance reports;
- maintenance of records concerning the status of all approved mitigation measures;
- quality control assurance of field monitoring personnel;
- coordination with other agencies regarding compliance with mitigation or permit requirements;

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- reviewing and recommending acceptance and certification of implementation documentation; and
- acting as a contact for interested parties or surrounding property owners who wish to register complaints, observations of unsafe conditions, or environmental violations; verifying any such circumstances and developing any necessary corrective actions.

Resolution of Noncompliance Complaints

Any person or agency may file a complaint about noncompliance with the mitigation measures that are adopted as part of the approval process for the SMP Update. The complaint shall be directed to SCVWD (5750 Almaden Expressway, San Jose, CA 95118-3686, or e-mail smp_update@valleywater.org) in written form, providing detailed information on the purported violation. SCVWD will investigate any complaints filed to determine the validity of the complaint. If noncompliance with a mitigation measure is verified, SCVWD shall take the necessary action(s) to remedy the violation. The complaint shall receive written confirmation indicating the results of the investigation or the final corrective action that was implemented in response to the specific noncompliance issue.

Mitigation Monitoring and Reporting Plan Matrix

The MMRP is organized in a matrix format. The first column identifies the mitigation measure number. The second column describes each mitigation measure. The third column, “Time Frame for Implementation,” refers to when monitoring will occur. The timing for implementing mitigation measures and the definition of the approval process has been provided to assist staff from SCVWD to plan for monitoring activities. The fourth column, “Responsible Monitoring Entity,” refers to the entity responsible for ensuring that the mitigation measure is implemented. The fifth column, “Verification of Compliance,” has subcolumns for Initials, Date, and Remarks. This last column will be used by SCVWD, as lead agency, to document the person who verified the implementation of the mitigation measure, the date on which this verification occurred, and any other notable remarks.

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MITIGATION AND MONITORING REPORTING PROGRAM

**Santa Clara Valley Water District
Stream Maintenance Program Update
Draft Subsequent Environmental Impact Report**

No.	Mitigation Measure ¹	Time Frame for Implementation	Responsible Monitoring Entity	Verification of Compliance		
				Initials	Date	Remarks
<i>Air Quality</i>						
AIR-1A	Reduction in Fleet Emissions	Prior to implementing NOx-generating activities under the Proposed Project	District			
AIR-1B	Off-site NOx Emissions Mitigation Program	Prior to implementing NOx-generating activities under the Proposed Project	District			
AIR-1C	NOx Emissions Offsets²	Prior to implementing NOx-generating activities under the Proposed Project	District			
<i>Biology</i>						
BIO-1	Implement Compensatory Mitigation for Wetlands and Other Waters	Annually in accordance with the annual work plan	District			

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No.	Mitigation Measure ¹	Time Frame for Implementation	Responsible Monitoring Entity	Verification of Compliance		
				Initials	Date	Remarks
BIO-2	Implement Compensatory Mitigation for Woody Riparian Vegetation	Annually in accordance with the annual work plan	District			
BIO-3	Implement Compensatory Mitigation for Serpentine Communities	Annually in accordance with the annual work plan	District			
BIO-4	Implement Compensatory Mitigation for Serpentine-Associated Special-Status Plant Species	Annually in accordance with the annual work plan	District			
BIO-5	Implement Compensatory Mitigation for Impacts to Non-Serpentine Special-Status Plant Species	Annually in accordance with the annual work plan	District			
BIO-6	Implement Compensatory Mitigation for Impacts to Serpentine-Associated Special-Status Invertebrates	Annually in accordance with the annual work plan	District			
BIO-7	Tree Replacement	Annually in accordance with the annual work plan	District			
BIO-8	Augmentation of Spawning Gravel	Annually in accordance with the annual work plan	District			
BIO-9	Augmentation of Instream Complexity for Non-Tidal Stream Fish	Annually in accordance with the annual work plan	District			

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No.	Mitigation Measure ¹	Time Frame for Implementation	Responsible Monitoring Entity	Verification of Compliance		
				Initials	Date	Remarks
BIO-10	Implement Compensatory Mitigation for the California Tiger Salamander	Annually in accordance with the annual work plan	District			
BIO-11	Implement Compensatory Mitigation for the California Red-Legged Frog	Annually in accordance with the annual work plan	District			
BIO-12	Implement Compensatory Mitigation for the Least Bell's Vireo	Annually in accordance with the annual work plan	District			
BIO-13	Implement Compensatory Mitigation for the Burrowing Owl	Annually in accordance with the annual work plan	District			
BIO-14	Implement Compensatory Mitigation for the Yellow Warbler	Annually in accordance with the annual work plan	District			
BIO-15	Provide Alternative Bat Roost	Annually in accordance with the annual work plan	District			
BIO-16	Invasive Species Management Program	Annually in accordance with the annual work plan	District			

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No.	Mitigation Measure ¹	Time Frame for Implementation	Responsible Monitoring Entity	Verification of Compliance		
				Initials	Date	Remarks
Global Climate Change						
GCC-1A	On-site or Off-site GHG Emissions Mitigation Program	Prior to implementing GHG-generating activities under the Proposed Project	District			
GCC-1B	Greenhouse Gas Emissions Offsets	Prior to implementing GHG-generating activities under the Proposed Project	District			

1 See full text on the following pages.

2 Source: Allen, Donald. Cantor Co2e (http://www.cantorco2e.com/Environment/?page=USAComp_ERC-BAAQMD). May 6 and May 7, 2011—telephone conversations with Ryan Jolley of Horizon Water and Environment regarding NOx credits.

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Mitigation Measure AIR-1A Reduction in Fleet Emissions

The District will develop a plan to demonstrate that the off-road equipment (more than 50 horsepower) to be used in the SMP Update (i.e., owned, leased, and subcontractor vehicles) would achieve a project-wide, fleet-average 20 percent NO_x reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late-model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices (such as particulate filters), and/or other options as they become available.

Mitigation Measure AIR-1B Off-site NO_x Emissions Mitigation Program

SCVWD may establish a program to implement off-site NO_x emissions reduction projects within the SFBAAB to reduce those NO_x emissions from the SMP Update in exceedance of BAAQMD operational significance thresholds. The total reduction will be 9 tons (the average annual exceedance anticipated over the lifetime of the SMP Update, based on the average between estimated 2012 and 2020 emissions), as adjusted based on the emissions reductions to be achieved by Mitigation Measure AIR-1A. The NO_x emission reductions projects will be from sources of emissions that are not required by any existing law to reduce their NO_x emissions. Offsetting annual emissions inherently includes offsetting daily emissions. Therefore, no additional reductions will be required for daily NO_x emissions. Documentation of off-site NO_x reductions will be provided to the BAAQMD.

Mitigation Measure AIR-1C NO_x Emissions Offsets

As an alternative to Mitigation Measure AIR-1B, SCVWD will purchase NO_x emission reduction credits to reduce or offset those NO_x emissions in exceedance of BAAQMD operational significance thresholds. The total reduction (or credits) will be 9 tons, as adjusted based on the emissions reductions achieved by Mitigation Measure AIR-1A. Offsetting annual emissions inherently includes offsetting daily emissions. Therefore, no additional offsets will be required for daily NO_x emissions.

SCVWD will engage a private broker to facilitate the purchase of credits through the BAAQMD emissions bank. Purchase of these credits from the BAAQMD emissions bank will ensure that NO_x offsets occur in the SFBAAB. Once NO_x emission reduction credits are purchased for a given quantity, that amount of NO_x will be offset in perpetuity. Therefore, a one-time purchase of 9 tons of credits will mitigate for the duration of the SMP Update (2012-2022) as well as for future SMP-related emissions beyond 2022, assuming emissions will not have increased.

Documentation of purchased NO_x offsets will be provided to the BAAQMD.

Mitigation Measure BIO-1: Implement Compensatory Mitigation for Wetlands and Other Waters

The compensatory mitigation package, which is detailed in Appendix C, 2012–2022 SMP Update Mitigation Approach Memorandum, shall be implemented to compensate for new impacts (i.e., work areas not included in the 2002–2012 work projections) on wetlands (both jurisdictional and non-jurisdictional) and on jurisdictional “other waters”; no mitigation is necessary for impacts to non-jurisdictional “other waters”, which are limited to unvegetated areas of inoperable canals. Following the procedure described in Appendix C, the SCVWD would refine the quantification of impacts to wetlands and other waters that occur during a specific year, tallying the impact totals at the end of the year, and compensatory mitigation will be implemented the following year, in many cases. Exceptions will occur in cases in which compensatory mitigation is incorporated directly into Proposed Project work areas; in those cases, compensatory mitigation may be implemented during the same year in which impacts occur. Details regarding performance criteria for mitigation, as well as for monitoring and reporting, are described in Appendix C.

According to the mitigation package, SCVWD will have several options for satisfying mitigation requirements for impacts to wetlands and other waters by the SMP. The two main types of mitigation that can be applied for impacts to non-tidal wetlands and other waters resulting from sediment removal, vegetation management, canal maintenance, and minor maintenance are “in perpetuity” mitigation and “pay as you go” mitigation.

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In perpetuity mitigation. For permanent impacts and, at the discretion of SCVWD, repetitive impacts to wetlands or other waters in a specific area, SCVWD will provide mitigation in perpetuity via one or more of the following methods:

- *In-kind restoration/creation:* SCVWD will restore, preserve, and manage wetlands and aquatic habitats, or substantially improve the quality of highly degraded wetlands and aquatic habitats at a ratio of 1.5:1, meaning 1.5 acres of wetlands or other waters shall be restored/created for every 1 acre of wetlands and other waters impacted by Proposed Project activities.
- *In-kind preservation and enhancement:* SCVWD will acquire, preserve, enhance, and manage lands that provide similar ecologic functions and values to the wetlands and other waters impacted by SMP maintenance activities. The acquisition and preservation/enhancement of these higher quality lands will occur at a ratio of 3:1, meaning 3 acres of wetlands or other waters shall be acquired, preserved, and enhanced for every 1 acre of wetlands and other waters impacted by Proposed Project activities. Enhancement may include modification of existing management, limited planting, or invasive plant removal, or other activities to enhance wetland/aquatic habitat functions and values.
- *Out-of-kind preservation of watershed lands:* SCVWD will acquire, preserve, enhance, and manage watershed lands. These lands provide more general conservation, open space, and habitat values. Although acquired lands would not be specifically tied or matched in-kind to wetland impacts, as they can include a variety of non-wetland/aquatic habitats, their preservation and management will help to maintain the quality of wetlands and aquatic habitats through management focused on benefits to the aquatic environment, such as management to reduce erosion and sedimentation. The acquisition of more general watershed conservation lands will occur at a ratio of 8:1, meaning 8 acres of land shall be acquired and restored for every 1 acre of impacted habitats resulting from Proposed Project activities.
- *Enhancement or management of land that is owned by other agencies:* SCVWD may collaborate with owners of land that is currently managed for open space or passive recreation. In such cases, SCVWD would not acquire the mitigation lands but would enter into an agreement with the landowners to provide management and financial support toward preserving or improving the lands toward beneficial outcomes, including improved habitats. In these cases, a detailed management plan for species or habitats would be SCVWD's responsibility and would not necessarily be managed by the landowner. The mitigation accounting for such "partnership projects" and how much mitigation would be provided to account for SMP Update activities would be reviewed and developed with regulatory staff on a case-by-case basis.

For any of the three mitigation options above, the mitigation areas will be preserved and managed in perpetuity by SCVWD. Mitigation could occur on lands acquired or owned by SCVWD, or on permanently protected lands not owned by SCVWD but by another entity (e.g., an open space district or park lands). These options would reduce impacts to wetlands and aquatic habitats to less-than significant levels by directly replacing wetlands (in-kind restoration/creation); directly improving the functions and values of existing wetlands and maintaining those resources through long-term management (in-kind preservation and enhancement); or indirectly enhancing and/or protecting wetland and aquatic functions and values by protecting watershed lands that contribute to wetland and aquatic habitat ecology and integrity (out-of-kind preservation of watershed lands). The mitigation ratios for these three options were selected to reflect the relative value of each type of mitigation, with in-kind restoration/creation having the lowest mitigation ratio to reflect its direct compensation for lost wetlands, and out-of-kind preservation of watershed lands having the highest mitigation ratio to reflect its more indirect value in protecting and enhancing wetlands and aquatic habitats. Because acquisition lands will be conserved in perpetuity, the mitigation they provide will also serve the SMP in perpetuity. As a result, if in-perpetuity mitigation were applied to impacts to wetlands and other waters in a certain area, no further mitigation would be needed if repetitive impacts to that area were to occur, in perpetuity.

Pay as you go mitigation. Unless it specifically decides to use in perpetuity mitigation to compensate for impacts to wetlands and aquatic habitats in a certain area (e.g., an area where sediment removal or vegetation management will have frequent, repetitive impacts), SCVWD will use two programs (invasive plant management and riparian planting) to provide incremental "pay as you go" habitat mitigation to

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compensate for annual impacts to wetlands and aquatic habitats from sediment removal and vegetation management activities. A mitigation ratio of 1.2:1 (area mitigated to area impacted) shall be applied for habitat impacts from sediment removal and vegetation management activities. SCVWD can use either the invasive plant management program or the riparian planting program (or a combination of the programs) to achieve this net mitigation target for annual activities.

Invasive plant management. The primary goal of the invasive plant management program (IPMP) element of the SMP's compensatory mitigation package is to preserve and improve habitat within Santa Clara County streams and riparian corridors by reducing the population of invasive plant species. The IPMP will have a two-pronged approach:

- a systematic program with the longer-term objective of identifying, prioritizing, and controlling invasive plants throughout the Project Area; and
- an opportunistic, site-specific approach with the objective to remove invasive plants from individual SMP work sites. (As mitigation for vegetation management activities, each of the SMP maintenance sites will be evaluated for on-site invasive plant removal and control. Invasive plant management will focus on controlling species that are invasive at individual SMP work sites.)

Riparian planting. The primary goal of the riparian planting component of the SMP mitigation package is to compensate for the loss of quality and quantity of native-dominated riparian habitat because of maintenance activities. Riparian planting will enhance habitat for birds, amphibians, and other wildlife using terrestrial riparian areas while providing shading, sources of organic matter and coarse woody debris, and water quality benefits to aquatic species.

Opportunities for riparian planting and restoration will be evaluated at all vegetation management maintenance locations. SCVWD's preference will be to first prioritize riparian planting at maintenance sites, and in this way provide direct on-site mitigation for maintenance activities. Riparian planting and restoration will provide mitigation that directly addresses impacts associated with vegetation management activities. Where opportunities for onsite riparian planting and restoration are unavailable or highly constrained, SCVWD will identify offsite locations that can provide suitable mitigation opportunities. Off-site riparian planting restoration sites will be prioritized to:

- stream reaches with riparian restoration opportunities for sensitive fish and/or wildlife species;
- stream reaches where riparian restoration of existing riparian canopy gaps will improve connectivity between existing patches of high-quality riparian habitat; and
- stream reaches with riparian habitat gaps where invasive plant species have been treated to accelerate native riparian plant establishment and inhibit re-colonization by invasive plant species.

Although invasive species management and riparian planting do not result in the direct replacement of lost or degraded wetland habitat, they do contribute substantially to the protection and enhancement of aquatic functions. As a result, riparian buffer plantings have been recognized as an appropriate component of programs to mitigate impacts to jurisdictional wetlands and other waters of the U.S. by the USACE (2002).

The "pay as you go" mitigation areas will not be preserved and managed in perpetuity. However, several factors were considered in determining that these components of the mitigation plan will reduce residual impacts to wetlands and aquatic habitats to less-than-significant levels:

- These "pay as you go" mitigation options will benefit wetlands and aquatic habitats indirectly, by increasing the functions and values of existing wetland and aquatic habitats.
- Any riparian planting area used as pay as you go mitigation for impacts to wetlands or aquatic habitats will remain unimpacted for at least 10 years; or, if the mitigation area is impacted within 10 years, it will then be replaced elsewhere.
- Pay as you go mitigation will be provided each time a specific area of wetlands or other waters is

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impacted. For example, if the same 1-acre area were impacted three times during the 10-year SMP Update period, then 3.6 acres of pay as you go mitigation will be provided for impacts to that area during the 10-year period.

- Impacts to any specific area will degrade, but will not entirely remove, wetland and aquatic functions and values within the impact area.

Mitigation for Bank Stabilization Impacts. Impacts to non-tidal wetlands and aquatic habitats resulting from bank stabilization will be provided via the methods described in Appendix C and using the mitigation ratios identified in Table 2-4. Softscape repairs will be self-mitigating because they will not result in long-term adverse effects. Mitigation may occur through a combination of replacement of “hard” stabilization measures with soft, biotechnical measures (either on the stabilization site or off-site) or out-of-kind via riparian revegetation as determined by a Mitigation Feasibility Assessment, as described in Appendix C. These measures will reduce impacts to wetlands and aquatic habitats resulting from bank stabilization by increasing the functions and values of existing wetland and aquatic habitats.

Mitigation for Impacts to Tidal Wetlands and Other Waters. As mitigation for impacts to tidal habitats and tidal marsh species predicted to result from the 2002–2012 SMP, SCVWD restored the “Island Ponds” (Ponds A19, A20, and A21), located between Coyote Slough and Mud Slough near Alviso, to tidal action. Monitoring has documented all performance criteria appropriate for the development of both vegetated tidal salt/brackish marsh and tidal aquatic habitat, including the formation of nascent tidal marsh habitat, including extensive channel networks, within these ponds. Thirty acres of tidal restoration within the Island Ponds was intended to serve as mitigation for impacts to tidal habitats for the 2002–2012 SMP. However, based on the actual impacts from 2002–2012 Proposed Project activities, only 9 acres of tidal mitigation will be needed to compensate for those impacts. Therefore, SCVWD created 21 acres of excess tidal habitats. SCVWD will use the 21 acres of excess tidal marsh restoration as mitigation for impacts to tidal wetlands and aquatic habitats, as well as tidal marsh species, under the 2012–2022 SMP. Physical breaching of the Island Pond levees and other physical work required for this tidal restoration has already occurred, and no further activities (other than continued monitoring of marsh development per the 2002–2012 SMP monitoring requirements) are proposed by SCVWD.

It is possible that these mitigation measures may be refined during permitting with the USACE, RWQCB, and CDFG, in which case the refinements required by these resource agencies would be implemented.

MM BIO-1 will mitigate impacts to wetlands and other waters, including jurisdictional waters of the U.S./state, to less-than-significant levels by replacing lost wetlands and aquatic habitats through restoration or by replacing the lost functions and values provided by these habitats through other means, such as non-native plant removal and watershed protection. Thus, MM BIO-1 will assure that the SMP does not result in a substantial adverse effect on federally protected wetlands or on sensitive wetland and aquatic communities.

Mitigation Measure BIO-2: Implement Compensatory Mitigation for Woody Riparian Vegetation

The compensatory mitigation package, which is incorporated into the Proposed Project and detailed in Appendix C, shall be implemented to compensate for new impacts (i.e., work areas not included in the 2002–2012 work projections) on woody riparian vegetation. Following the procedure described in Appendix C, the SCVWD would refine the quantification of impacts to riparian vegetation that occur during a specific year, tallying the impact totals at the end of the year, and compensatory mitigation will be implemented the following year, in many cases. Exceptions will occur in cases in which compensatory mitigation is incorporated directly into the SMP work areas; in those cases, compensatory mitigation may be implemented during the same year in which impacts occur. Details regarding performance criteria for mitigation, as well as for monitoring and reporting, are described in Appendices C and Appendix L.

According to the mitigation package, SCVWD will have several options for satisfying mitigation requirements for impacts to riparian vegetation by the SMP. The two main types of mitigation that can be applied for impacts to riparian vegetation resulting from sediment removal, vegetation management, canal maintenance, and minor maintenance are “in perpetuity” mitigation and “pay as you go” mitigation. These mitigation options would be applied to riparian vegetation as described in Mitigation Measure BIO-1 for wetlands and other waters.

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For any of the three “in perpetuity” mitigation options, the mitigation areas will be preserved and managed in perpetuity by SCVWD or a land management agency. These options will reduce impacts to riparian vegetation to less-than significant levels by directly replacing such vegetation (in-kind restoration/creation); directly improving the functions and values of existing riparian vegetation and maintaining those resources through long-term management (in-kind preservation and enhancement); or indirectly enhancing and/or protecting riparian functions and values by protecting watershed lands that contribute to riparian habitat ecology and integrity (out-of-kind preservation of watershed lands). The mitigation ratios for these three options were selected to reflect the relative value of each type of mitigation, with in-kind restoration/creation having the lowest mitigation ratio to reflect its direct compensation for lost riparian vegetation, and out-of-kind preservation of watershed lands having the highest mitigation ratio to reflect its more indirect value in protecting and enhancing riparian vegetation. Because acquisition lands will be conserved in perpetuity, the mitigation they provide also will serve the SMP in perpetuity. As a result, if in-perpetuity mitigation is applied to impacts to riparian vegetation in a certain area, no further mitigation will be needed if repetitive impacts to that area occurs, in perpetuity.

“Pay as you go” mitigation via invasive plant management and riparian planting will directly compensate for impacts to riparian vegetation. In many areas, invasive plant management will remove invasive species that occupy areas that otherwise can support riparian vegetation, and that threaten further to invade riparian areas. Riparian planting obviously will provide in-kind mitigation for impacts to riparian vegetation.

Mitigation for bank stabilization impacts also will be provided, as described in Mitigation Measure BIO-1 for wetlands and other waters.

Two components of the mitigation package that are directly applicable to the compensation for impacts to riparian vegetation, but that were not applicable to (and thus not discussed in) Mitigation Measure BIO-1, are mitigation for pruning and mitigation for removal of trees 6-12 inches dbh (removal of trees greater than 12 inches dbh is not included in the SMP).

The mitigation requirement for pruning is the same as the riparian replanting mitigation ratio of 1.2:1. Based on the International Society of Arboriculture pruning standards, and the SMP Manual (Appendix A), no more than 25 percent of a tree would be pruned, unless greater pruning is necessary for safety or specific ecological purposes (e.g., codominant stem species). Applying the degree of impact (25 percent of any given tree) to the mitigation ratio of 1.2:1, the resulting mitigation factor is 0.3. Up to 40 acres of pruning may occur, and thus the resulting mitigation acreage necessary is 12 acres (40 acres x 0.3). Whereas other mitigation will be calculated on an annual basis, these 12 acres of mitigation will be provided for the entire program, and a maximum (or “cap”) of 40 acres of hand pruning will be established for the entire program for the period 2012–2022.

Removal of trees up to 6 inches dbh will not require mitigation on a tree-by-tree basis; rather, impacts to woody riparian vegetation comprised of trees or shrubs less than 6 inches dbh will be mitigated (as described above) via in perpetuity or pay as you go mitigation. However, removal of trees sized 6-12 inches dbh will be mitigated through the individual planting of replacement trees. Appendix B in the 2012–2022 SMP Update Mitigation Approach Memorandum (Appendix C), Tree Scoring for Removal of Trees and Shrubs ≤ 12”DBH provides a specific tree appraisal and evaluation protocol to determine how replacement planting occurs. The protocol involves carefully assessing targeted tree removals for their existing conditions and functions, including their canopy cover, local area value, ecosystem benefits, and ecosystem detriments. Using a cumulative ranking method, tree replacement mitigation ratios for removed trees (6-12 inches dbh) occurs at either 1:1, 2:1, or 3:1 (replacement tree to removed tree), depending on the overall quality and function of the removed tree.

Impacts to riparian vegetation containing trees 6-12 inches dbh are, therefore, mitigated in two ways—mitigation on an acreage basis via in perpetuity or pay as you go mitigation, plus mitigation via replacement of trees 6-12 inches dbh. The two mitigation areas will be non-overlapping. As a result, the extent of mitigation for impacts to more mature woody riparian vegetation will be greater, as is appropriate based on the greater functions and values to wildlife, than impacts to less mature riparian vegetation.

As part of the riparian mitigation component, SCVWD will mitigate impacts to sensitive riparian communities, including sycamore alluvial woodland and oak woodland, in-kind. For a specific extent of impact to sycamore alluvial woodland or oak woodland, the in perpetuity or pay as you go mitigation that is applied to that impact

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will focus on enhancement, preservation, and/or restoration of that sensitive community type; removal of invasives will not be considered appropriate mitigation for these sensitive community types unless accompanied by restoration that targets that community type. Similarly, when impacts to high-quality occurrences of cottonwood-dominated forest occur, SCVWD will mitigate by providing cottonwood-dominated mitigation sites. "High-quality" occurrences will be determined by a qualified botanist based on criteria such as evidence of natural regeneration and the presence of multi-layered and multi-aged stands.

It is possible that these mitigation measures may be refined during permitting with the USACE, RWQCB, and CDFG, in which case the refinements required by these resource agencies would be implemented.

MM BIO-2 will mitigate impacts to riparian habitats to less-than-significant levels by replacing lost riparian vegetation through restoration or by replacing the lost functions and values provided by these habitats through other means, such as non-native plant removal and watershed protection. Thus, MM BIO-2 will assure that the SMP does not result in a substantial adverse effect on sensitive riparian communities.

Mitigation Measure BIO-3: Implement Compensatory Mitigation for Serpentine Communities

SCVWD will provide mitigation for unavoidable impacts to high-quality serpentine communities, including grassland, rock outcrops, seeps, and chaparral. SCVWD would refine the quantification of impacts to high-quality serpentine habitat on an annual basis. Along SCVWD's canals, where most or all SMP impacts to serpentine species and communities are expected to occur, high-quality serpentine communities were mapped by SCVWD using data gathered during surveys in 2004 and 2008. Serpentine communities are considered to be of "high quality" if they are in a semi-natural or natural/undisturbed state and meet one or both of the following criteria:

- Presence of multiple special-status plant occurrences
- Relatively high abundance of natives or serpentine obligates vs. non-natives

Before Proposed Project activities that can impact serpentine communities and species, an SCVWD botanist will conduct a review of potential serpentine impact areas using existing data, such as SCVWD's mapping, and field verification as needed, to identify high-quality serpentine communities. At the end of that year's maintenance period, SCVWD will determine the extent of impacts to high-quality serpentine communities that have occurred during the year.

Compensation for unavoidable effects to high-quality serpentine communities will be provided via the protection, enhancement, and management of serpentine communities outside SMP work sites at a 2:1 (impact:mitigation) ratio, on an acreage basis. SCVWD will acquire land supporting serpentine communities via fee title or purchase of a conservation easement. Compensatory mitigation may be carried out through one or both of the following methods, in order of preference:

- The preservation and management of existing serpentine communities
- The restoration or enhancement of previously existing or degraded serpentine communities

SCVWD will develop a Habitat Mitigation and Management Plan (HMMP), describing the measures that will be taken to enhance and manage the mitigation lands and to monitor the effects of management on serpentine communities. That plan will include, at a minimum, the following:

- A summary of impacts to high-quality serpentine communities and the proposed mitigation
- A description of the location and boundaries of the mitigation site and description of existing site conditions
- A description of measures to be undertaken if necessary to enhance (e.g., through focused management) the mitigation site for serpentine communities
- Proposed management activities, such as managed grazing and management of invasive plants, to

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maintain high-quality serpentine communities

- A description of community monitoring measures on the mitigation site, including specific, objective goals and objectives, performance indicators, success criteria, monitoring methods, data analysis, reporting requirements, and monitoring schedule

(Determining specific performance/success criteria requires information regarding the specific mitigation site, its conditions, the biological resources present on the site, and the specific enhancement and management measures tailored to that site and its conditions. As a result, those specific criteria will be defined in the HMMP rather than in this EIR. Nevertheless, the performance/success criteria described in the HMMP will guide the mitigation for management and protection of high-quality serpentine communities to adequately compensate for the functions and values of the impacted communities.)

- A description of the management plan's adaptive component, including potential contingency measures for mitigation elements that do not meet performance criteria
- A description of the funding mechanism for the long-term maintenance and monitoring of the mitigation lands

After mitigation has been provided for impacts to a specific area supporting high-quality serpentine communities and/or special-status species from a specific year's activities, future (i.e., repetitive) impacts to that area will not require additional mitigation.

The HMMP will be provided to the USFWS for review because some of the serpentine-associated special-status species that would benefit from this mitigation are federally listed species regulated by the USFWS. It is possible that this mitigation measure may be refined during the Section 7 consultation process with the USFWS (e.g., in the Biological Opinion covering Project effects on federally listed, serpentine-associated species), in which case the refinements required by the USFWS would be implemented.

MM BIO-3 will mitigate impacts to sensitive serpentine communities to less-than-significant levels by replacing the functions and values provided by such communities through the enhancement, management, and protection of serpentine communities. Thus, MM BIO-3 will assure that the SMP does not result in a substantial adverse effect on sensitive serpentine communities or threaten to eliminate this plant community.

Mitigation Measure BIO-4: Implement Compensatory Mitigation for Serpentine-Associated Special-Status Plant Species

SCVWD will provide mitigation for unavoidable impacts to serpentine-associated special-status plant populations. Before Proposed Project activities that can impact serpentine communities and species, an SCVWD botanist will conduct a review of potential serpentine impact areas using existing data, such as SCVWD's mapping, and field verification as needed, to identify high-quality serpentine communities. The botanist also will conduct a pre-activity survey for special-status plants. At the end of that year's maintenance period, SCVWD would refine the quantification of impacts to populations of special-status serpentine-associated plants.

Compensation for unavoidable impacts to populations of special-status serpentine-associated plants will be provided by a combination of preservation and enhancement of those species' populations outside SMP work sites. For impacts to populations (including partial populations) of a specific special-status serpentine plant species, compensatory mitigation will include preservation, enhancement, and management of lands that (a) already support equal or greater numbers (and health) of individuals of that species and (b) contain sufficient unoccupied habitat to allow for an increase in populations, the increase being at least equivalent to the number impacted, through habitat enhancement and management. For determining the number of individuals impacted, the highest number of individuals known to be present within the impact area (if the impact area has undergone multiple surveys) will be used to determine the magnitude of the impact.

Compensatory mitigation for impacts to high-quality serpentine communities (as discussed in Mitigation Measure BIO-3) and special-status serpentine-associated plants may occur on the same lands, provided that the conditions pertaining to special-status plant species are satisfied for each species for which

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mitigation is required. The HMMP that will be prepared by SCVWD to describe the measures that will be taken to enhance, manage, and monitor the mitigation lands (as discussed in Mitigation Measure BIO-3) also will include consideration of focal special-status species. For example, in addition to the measures described in Mitigation Measure BIO-3, the HMMP also will include the following:

- A summary of impacts to special-status plant populations and the proposed mitigation
- A description of measures to be undertaken if necessary to enhance (e.g., through focused management) the mitigation site for special-status species
- A description of measures to transplant individual plants or seeds from the impact area to the mitigation site, if determined by a qualified botanist to be appropriate and to have a high likelihood of success
- Proposed management activities, such as managed grazing and management of invasive plants, to maintain high-quality habitat conditions for the focal species
- A description of species monitoring measures on the mitigation site, including specific, objective goals and objectives, performance indicators, success criteria, monitoring methods, data analysis, reporting requirements, and monitoring schedule. Determining specific performance/success criteria requires information regarding the specific mitigation site, its conditions, the biological resources present on the site, the specific plant species for which mitigation is being provided, and the specific enhancement and management measures tailored to the mitigation site and its conditions. As a result, those specific criteria will be defined in the HMMP rather than in this EIR. Nevertheless, the performance/success criteria described in the HMMP will guide mitigation to manage and protect high-quality serpentine habitat for, and populations of, the impacted species.

After mitigation has been provided for impacts to special-status plant populations in a specific area from a specific year's activities, future (i.e., repetitive) impacts to that area will not require additional mitigation.

The HMMP will be provided to the USFWS for review because some of the serpentine-associated special-status species for which the HMMP will be prepared are federally listed species regulated by the USFWS. It is possible that this mitigation measure may be refined during the Section 7 consultation process with the USFWS (e.g., in the Biological Opinion covering Project effects on federally listed, serpentine-associated species), in which case the refinements required by the USFWS would be implemented.

MM BIO-4 will mitigate impacts to special-status serpentine-associated plants to less-than-significant levels by enhancing, managing, and protecting populations of these species so that the SMP does not substantially reduce the number or restrict the range of rare or endangered serpentine-associated plants or have a substantial adverse effect on special-status serpentine-associated plants.

Mitigation Measure BIO-5: Implement Compensatory Mitigation for Impacts to Non-Serpentine Special-Status Plant Species

If Proposed Project activities result in the loss of individual non-serpentine special-status plants, other than the Santa Clara red ribbons, Hospital Canyon larkspur, western leatherwood, Hall's bush-mallow, and robust Monardella, compensatory mitigation will be provided. Before Proposed Project activities that can impact these special-status species, an SCVWD botanist will conduct a review of potential impact areas using existing data, and field verification as needed, to identify areas of potential occurrence of these species. The botanist also will conduct a pre-activity survey for special-status plants in areas where occurrence is possible. At the end of that year's maintenance period, SCVWD will determine the extent of impacts to populations of these special-status plants.

Compensation for unavoidable impacts to populations of special-status non-serpentine plants will be provided by a combination of preservation and enhancement of those species' populations outside SMP work sites. For impacts to populations (including partial populations) of a specific special-status plant species, compensatory mitigation will include preservation, enhancement, and management of lands that (a) already support equal or greater numbers (and health) of individuals of that species and (b) contain sufficient unoccupied habitat to allow for an increase in populations, the increase being at least equivalent to the

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number impacted, through habitat enhancement and management. For determining the number of individuals impacted, the highest number of individuals known to be present within the impact area (if the impact area has undergone multiple surveys) will be used to determine the magnitude of the impact.

SCVWD will develop an HMMP describing the measures that will be taken to enhance and manage the mitigation lands and to monitor the effects of management on the focal special-status plant species. That plan will include, at a minimum, the following:

- A summary of impacts to special-status plant populations, and the proposed mitigation
- A description of the location and boundaries of the mitigation site and description of existing site conditions
- A description of measures to be undertaken if necessary to enhance (e.g., through focused management) the mitigation site for special-status species
- A description of measures to transplant individual plants or seeds from the impact area to the mitigation site, if determined by a qualified botanist to be appropriate and to have a high likelihood of success
- Proposed management activities to maintain high-quality habitat conditions for the focal species
- A description of species monitoring measures on the mitigation site, including specific, objective goals and objectives, performance indicators, success criteria, monitoring methods, data analysis, reporting requirements, and monitoring schedule. Determining specific performance/success criteria requires information regarding the specific mitigation site, its conditions, the biological resources present on the site, the specific plant species for which mitigation is being provided, and the specific enhancement and management measures tailored to the mitigation site and its conditions. As a result, those specific criteria will be defined in the HMMP rather than in this EIR. Nevertheless, the performance/success criteria described in the HMMP will guide the mitigation to manage and protect high-quality habitat for, and populations of, the impacted species.
- A description of the management plan's adaptive component, including potential contingency measures for mitigation elements that do not meet performance criteria
- A description of the funding mechanism for the long-term maintenance and monitoring of the mitigation lands

After mitigation has been provided for impacts to a specific area supporting special-status species from a specific year's activities, future (i.e., repetitive) impacts to that area will not require additional mitigation.

MM BIO-5 will mitigate impacts to special-status non-serpentine plants to less-than-significant levels by enhancing, managing, and protecting populations of these species so that the SMP does not substantially reduce the number or restrict the range of rare or endangered non-serpentine plants or have a substantial adverse effect on special-status non-serpentine plants.

Mitigation Measure BIO-6: Implement Compensatory Mitigation for Impacts to Serpentine-Associated Special-Status Invertebrates

SCVWD will compensate for its impacts to populations and habitat of serpentine-associated special-status invertebrates through the preservation and management of serpentine communities as described for Mitigation Measure BIO-3. The procedures for identifying impacts to potential habitat of these species will occur as described for serpentine communities under Mitigation Measure BIO-3. Mitigation lands will be preserved and managed as described for Mitigation Measure BIO-3 as well, with the qualification that for any impacts to high-quality serpentine communities within Bay checkerspot butterfly critical habitat, the compensatory mitigation lands also must be in Bay checkerspot critical habitat. The management and monitoring of mitigation lands, as described in the HMMP, will include measures specifically targeting the Bay checkerspot butterfly, which will serve as a proxy for the other special-status invertebrates.

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The HMMP will be provided to the USFWS for review because one of the serpentine-associated special-status species (Bay checkerspot butterfly) for which this HMMP will be prepared is a federally listed species regulated by the USFWS. It is possible that this mitigation measure may be refined during the Section 7 consultation process with the USFWS (e.g., in the Biological Opinion covering Project effects on the Bay checkerspot butterfly), in which case the refinements required by the USFWS would be implemented.

MM BIO-6 will mitigate impacts to serpentine-associated special-status invertebrates to less-than-significant levels by enhancing, managing, and protecting populations of these species so that the SMP does not substantially reduce the number or restrict the range of rare or endangered serpentine-associated invertebrates or have a substantial adverse effect on special-status serpentine-associated invertebrates.

Mitigation Measure BIO-7: Tree Replacement

The SCVWD will replace ordinance trees as follows. As discussed under Mitigation Measure BIO-2, removal of trees sized 6-12 inches dbh will be mitigated through the individual planting of replacement trees. Section 5.5 in Appendix C (Mitigation for Tree and Shrub Removals 6–12 inches dbh) provides a specific tree appraisal and evaluation protocol to determine how replacement planting should occur. The protocol in Section 5.5 of Appendix C will involve carefully assessing targeted tree removals for their existing conditions and functions, including their canopy cover, local area value, ecosystem benefits, and ecosystem detriments. Using a cumulative ranking method, tree replacement mitigation ratios for removed trees (6-12 inches dbh) will occur at either 1:1, 2:1, or 3:1 (replacement tree to removed tree), depending on the overall quality and function of the removed tree. Therefore, if any trees 6-12 inches dbh that are removed are ordinance trees (depending on the locality in which tree removal occurs), then mitigation will be provided as described in Section 5.5 of Appendix C.

It is possible that this mitigation measure may be refined during the permitting process by the USACE, CDFG, or RWQCB, in which case the refinements required by these agencies would be implemented.

MM BIO-7 will mitigate impacts to ordinance trees to less-than-significant levels by replacing trees that are removed so that the SMP does not conflict with the provisions of local tree ordinances.

Mitigation Measure BIO-8: Augmentation of Spawning Gravel

SCVWD will implement gravel augmentation as mitigation for SMP impacts to CCC and SCCC steelhead spawning habitat. If more than 500 square feet of sediment removal is proposed along steelhead streams, an SCVWD fisheries ecologist will assess the sediment removal site for spawning and rearing habitat quality before the initiation of work. The biologist will determine the extent of sediment that is proposed for removal and that is considered to be “high-quality” spawning gravel, based on the following criteria:

- Less than 25-30 percent fines less than 6.35 mm (Kondolf 2000, Kondolf and Wolman 1993)
- Less than 12-14 percent fines less than 0.85 mm (Kondolf 2000)
- D50 (median particle size) of 12.5 to 22.0 mm, based on D50 of rainbow trout and steelhead from 30 to 65 cm length (Kondolf and Wolman 1993), corresponding to a range of 275 to 640 cm of steelhead adults recovered in streams of the San Francisco estuary (Leidy et al. 2005)
- Minimum patch size greater than 1.1 m² (Trush 1991)

The habitat needs to be accessible under typical flows for when the appropriate life stages are present. Suitable depths and velocities must be available during flows typical of spawning season. Factors related to accessibility include depth and velocity criteria, which for spawning, are:

- Depth: 10–150 cm (Moyle 2002)
- Velocity: 20–155 cm/s (Moyle 2002)

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If more than 500 square feet of high-quality gravel will be removed along steelhead streams, compensatory mitigation will be provided by the installation of suitable spawning gravel along the affected creek at a 1:1 (mitigation:impact) ratio on a square footage or acreage basis. Locations where sediment removal is performed at fish ladders will not require gravel augmentation. The mitigation site will be as close to the impacted reach as is feasible, and will be located within a steelhead-accessible reach of the same creek. The site will be selected with input from the fisheries ecologist, taking channel capacity and other SMP-related factors into account. The fisheries ecologist will prepare specifications for the mitigation, including size, type, depth, and configuration of gravel. The mitigation will be implemented within 1 year following the impact.

Mitigation Measure BIO-9: Augmentation of Instream Complexity for Non-Tidal Stream Fish

SCVWD will provide mitigation for loss of instream complexity, which provides habitat heterogeneity, cover, and refugia during high flows, by in-kind installation of structures that provide such complexity. Before sediment removal, bank stabilization, or large woody debris removal activities, the affected area will be surveyed by an SCVWD fisheries ecologist to identify any features that provide high-quality instream complexity for fish. The ecologist will determine that such features are of "high quality" based on a combination of the following criteria:

- Large woody debris providing cover and refugia from high flow velocities
- Deep pools providing rearing habitat and refugia from high flow velocities
- Cobble/boulder features providing cover, refugia from high flow velocities, and velocities suitable for good invertebrate drift

If such high-quality features must be removed during Proposed Project activities, compensatory mitigation will be provided by the installation of instream complexity features on a 0.5:1 (mitigation:impact) basis, on the basis of either the number of complexity features or the area that is affected hydraulically by the features that are removed; the fisheries ecologist will determine which of these two metrics is appropriate based on the values to fish provided by the impacted features. Thus, one instream complexity feature will be installed for every two that are removed, or an instream complexity feature hydraulically affecting roughly half the area of the feature(s) removed will be installed. This ratio is less than 1:1 under the understanding that erosion, deposition, tree-falls, and debris mobilization within a few years following the removal of instream complexity will naturally reintroduce some complexity to the stream.

As examples, enhancing instream complexity may involve:

- enlarging an existing large woody debris feature;
- anchoring a large woody debris feature;
- geomorphically shaping an instream bar or bed feature for improved habitat;
- enhancing a pool feature threatened by sedimentation; or
- enhancing streambed conditions to increase the range of flow velocity and habitat conditions.

Priority for these mitigation activities will be given to SMP sites where instream features cannot be retained during construction because of conflicting objectives. For example, if a channel pool configuration cannot be retained during a bank protection job and the area is devoid of other complex pool features, then this area will be evaluated for the addition of an instream complexity feature.

In addition to enhancing existing features, new instream features may be developed to achieve several habitat objectives, including: increasing pool habitat in homogenized stream reaches, providing escape cover for rearing and spawning fish, deepening feeding areas in riffle habitat, creating a variety of stream flow velocities for cover, sorting gravel, and providing resting areas for upstream migration. Additionally, improving instream function can benefit other aquatic flora and fauna by improving the overall stream

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complexity for which these species depend on for survival. If effective, such new instream complexity features (particularly in highly modified, urban streams) can augment or replace existing structural features required for successful reproduction and rearing of native fish and amphibians in the freshwater environment.

Newly developed instream habitat improvements may use log structures, boulder structures, or a combination of both log and boulder structures to achieve more complex habitats. Possible configurations of boulders or logs include weirs, clusters, single and opposing wing deflectors, spider logs, and digger logs. The construction materials selected for each instream complexity feature will depend on the target objective and site conditions.

The selected mitigation site will be as close to the impacted reach as is technically feasible. For instream complexity features that are removed by sediment removal or bank stabilization activities, mitigation will be incorporated into the same reach where complexity was removed to the extent feasible. The site will be selected with input from the fisheries ecologist, taking channel capacity and other SMP-related factors into account. The fisheries ecologist will prepare specifications for the mitigation, including size, type, and configuration of the feature. The mitigation will be implemented within 1 year following the impact. The fisheries ecologist will then inspect the completed complexity feature to assure that it meets the criteria for "high quality" instream complexity listed above.

It is possible that MM BIO-8 and MM BIO-9 may be refined during the Section 7 consultation process with the NMFS (e.g., in the Biological Opinion covering Project effects on steelhead) or by the USACE, CDFG, or RWQCB in permits issued by these agencies, in which case the refinements required by these agencies would be implemented.

MM BIO-8 and BIO-9 together will mitigate impacts to steelhead to less-than-significant levels by enhancing habitat for this species so as to protect its populations, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this threatened species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

Mitigation Measure BIO-10: Implement Compensatory Mitigation for the California Tiger Salamander

SCVWD will provide mitigation to compensate for unavoidable impacts to California tiger salamanders and their habitat. SCVWD would refine the quantification of impacts to California tiger salamander habitat on an annual basis. At the end of each year's maintenance period, SCVWD will determine the extent of impacts to lands that are both within the potential range of the California tiger salamander and within potentially suitable habitat for the species. To determine whether the SMP impacts are within the potential range of the species, SCVWD will rely on the mapping in Figure 3.3-10 (which may be as modified over the course of 2012–2022, based on any new information that may modify the understanding of the species' potential range in the Project Area). To determine habitat suitability, an SCVWD biologist will determine whether the impact areas support land uses that are not conducive to California tiger salamander use, such as developed lands; all other land uses will be considered potential California tiger salamander habitat.

Compensation for these effects will be provided via the protection, enhancement, and management of habitat that currently supports, or can support, this species at a 2:1 (impact:mitigation) ratio, on an acreage basis. Compensatory mitigation may be carried out through one or both of the following methods, in order of preference:

- The preservation, management, and enhancement (e.g., through long-term management targeted toward this species) of high-quality habitat that is already occupied by California tiger salamanders
- The restoration or enhancement of degraded habitat or habitat that is unsuitable for use by California tiger salamanders, but that (a) is in close proximity to areas of known occurrence and (b) can be made more suitable for use via construction of one or more breeding ponds or management to improve the quality and availability of burrows in upland habitat

All mitigation lands for this species must be located within Santa Clara County and within the area where the species is thought to be extant as shown in Figure 3.3-10 (or as otherwise modified over the course of 2012–2022, based on any new information that may modify the understanding of the species' potential

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range in the Project Area). SCVWD will develop an HMMP describing the measures that will be taken to manage the property and to monitor the effects of management on the California tiger salamander. That plan will include, at a minimum, the following:

- a summary of impacts to California tiger salamander habitat and populations, and the proposed mitigation;
- a description of the location and boundaries of the mitigation site and description of existing site conditions;
- a description of measures to be undertaken if necessary to enhance (e.g., through focused management) the mitigation site for California tiger salamanders;
- proposed management activities, such as managed grazing, management of invasive plants, measures targeted at sustaining populations of burrowing mammals, or other measures to maintain high-quality habitat for California tiger salamanders;
- a description of species monitoring measures on the mitigation site, including specific, objective goals and objectives, performance indicators, success criteria, monitoring methods, data analysis, reporting requirements, and monitoring schedule. Determining specific performance/success criteria requires information regarding the specific mitigation site, its conditions, and the specific enhancement and management measures tailored to the mitigation site and its conditions. For example, performance criteria for a mitigation site providing only upland habitat for California tiger salamanders would include the maintenance of grassland habitat of a suitable height and density for burrowing mammals, and maintenance of suitable burrowing mammal populations, whereas a mitigation site providing salamander breeding habitat would also include criteria related to adequate depth and hydroperiod of breeding habitat. As a result, those specific criteria will be defined in the HMMP rather than in this EIR. Nevertheless, the performance/success criteria described in the HMMP will guide the mitigation to manage and protect high-quality habitat for the California tiger salamander, adequate to compensate for impacts.
- a description of the management plan's adaptive component, including potential contingency measures for mitigation elements that do not meet performance criteria; and
- a description of the funding mechanism for the long-term maintenance and monitoring of the mitigation lands.

If lands that SCVWD currently owns, such as mitigation lands acquired for the California red-legged frog for the 2002–2012 SMP, can be enhanced (e.g., via the construction of breeding ponds) in such a way as to substantially improve their value to California tiger salamanders, then SCVWD may use those lands as mitigation for the California tiger salamander. After mitigation has been provided for impacts to a specific area supporting the California tiger salamander from a specific year's SMP Update activities, future (i.e., repetitive) impacts to that area will not require additional mitigation.

The HMMP will be provided to the USFWS and CDFG for review because this species is both state and federally listed. It is possible that this mitigation measure may be refined during the Section 7 consultation process with the USFWS (e.g., in the Biological Opinion covering Project effects on the California tiger salamander) or the Section 2081 consultation process with the CDFG (e.g., in an Incidental Take Permit), in which case the refinements required by these agencies would be implemented.

MM BIO-10 will mitigate impacts to the California tiger salamander to less-than-significant levels by enhancing, managing, and protecting habitat for this species so as to protect its populations, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this threatened/endangered species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

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Mitigation Measure BIO-11: Implement Compensatory Mitigation for the California Red-Legged Frog

SCVWD will provide mitigation to compensate for unavoidable impacts to California red-legged frogs and their habitat. SCVWD would refine the quantification of impacts to California red-legged frog habitat on an annual basis. At the end of each year's maintenance period, SCVWD will determine the extent of impacts to lands that are both within the potential range of the California red-legged frog and within potentially suitable habitat for the species. To determine whether the SMP impacts are within the potential range of the species, SCVWD will rely on the mapping in Figure 3.3-13 (which may be as modified over the course of 2012–2022, based on any new information that may modify the understanding of the species' potential range in the Project Area). To determine habitat suitability, an SCVWD biologist will determine whether the impact areas support land uses that are not conducive to California red-legged frog use, such as developed lands; all other land uses will be considered potential California red-legged frog habitat.

Compensation for these effects will be provided via the protection, enhancement, and management of habitat that currently supports, or could support, this species at a 2:1 (impact:mitigation) ratio, on an acreage basis. Compensatory mitigation may be carried out through one or both of the following methods, in order of preference:

- The preservation, management, and enhancement (e.g., through long-term management targeted toward this species) of high-quality habitat that is already occupied by California red-legged frogs
- The restoration or enhancement of degraded habitat or habitat that is unsuitable for use by California red-legged frogs, but that (a) is in close proximity to areas of known occurrence and (b) could be made more suitable for use via construction of one or more breeding ponds, enhancement of breeding and non-breeding aquatic habitat via improvements to emergent vegetation or other cover, or management to improve the quality of upland habitat

All mitigation lands for this species must be located within Santa Clara County and within the area where the species is thought to be extant as shown in Figure 3.3-13 (or as otherwise modified over the course of 2012–2022, based on any new information that may modify the understanding of the species' potential range in the Project Area). SCVWD will develop an HMMP describing the measures that will be taken to manage the property and to monitor the effects of management on the California red-legged frog; the HMMP will include components similar to those described for California tiger salamanders. Determining specific performance/success criteria for this mitigation requires information regarding the specific mitigation site, its conditions, and the specific enhancement and management measures tailored to the mitigation site and its conditions. For example, performance criteria for a mitigation site providing only upland habitat for California red-legged frogs would include the maintenance of grassland habitat of a suitable height and density for use by dispersing frogs, whereas a mitigation site providing red-legged frog breeding habitat would also include criteria related to adequate depth and hydroperiod of breeding habitat and suitable vegetative cover. As a result, those specific criteria will be defined in the HMMP rather than in this EIR. Nevertheless, the performance/success criteria described in the HMMP will guide the mitigation to manage and protect high-quality habitat for the California red-legged frog, adequate to compensate for impacts.

After mitigation has been provided for impacts to a specific area supporting the California red-legged frog from a specific year's activities, future (i.e., repetitive) impacts to that area will not require additional mitigation.

The HMMP will be provided to the USFWS for review because the California red-legged frog is a federally listed species regulated by the USFWS. It is possible that this mitigation measure may be refined during the Section 7 consultation process with the USFWS (e.g., in the Biological Opinion covering Project effects on the California red-legged frog), in which case the refinements required by the USFWS would be implemented.

MM BIO-11 will mitigate impacts to the California red-legged frog to less-than-significant levels by enhancing, managing, and protecting habitat for this species so as to protect its populations, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this threatened species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

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Mitigation Measure BIO-12: Implement Compensatory Mitigation for the Least Bell's Vireo

One of the following two measures will be implemented so that adequate willow-dominated riparian habitat with adjacent shrubs and tall forbs is maintained in extreme southern Santa Clara County, in light of proposed activities, to provide potential nesting habitat for least Bell's vireos. Simultaneous with (i.e., within the same maintenance year as) performance of SMP activities that adversely affect least Bell's vireo habitat, the SCVWD will make the decision as to which of these measures will be applied.

- Mitigation Measure BIO-12A: The projected vegetation management regime for lower Llagas Creek, from Southside Drive downstream to the confluence with the Pajaro River, will be modified so that vegetation management in any specific area will occur no more frequently than every 3 years to allow for the regrowth of shrubs and taller forbs, which will provide foraging habitat for least Bell's vireos and other riparian birds. The levee tops and lower maintenance roads will be excluded from this requirement (i.e., vegetation management can occur on the levee tops and lower maintenance roads as needed), but no other vegetation management will occur more frequently than every 3 years. Furthermore, in any specific year, vegetation management will occur along no more than half (measured longitudinally along the creek) of the reach of lower Llagas Creek downstream from Southside Drive. This will assure that at any specific time, at least half of this reach will support vegetation that has not been managed (with the exception of levee top roads and lower maintenance roads) for at least 3 years, thus providing ample suitable nesting and foraging habitat for the low-level, irregular use of this reach by Bell's vireos that occurs. These limitations may need to be adapted if they do not maintain sufficient tall, weedy habitat along the edges of the woody riparian corridor to provide suitable least Bell's vireo foraging habitat, or if they produce abnormally dense, stunted growth of willows that is not suitable for use by nesting vireos. This measure is preferred by the District over Mitigation Measure 12B. However, if this measure cannot be implemented feasibly, or if SCVWD elects not to implement this measure, Mitigation Measure BIO-12B will be implemented.
- Mitigation Measure BIO-12B: SCVWD will create or restore conditions similar to those currently present along lower Llagas Creek by acquiring land, an easement on land, or permission from landowners along the Pajaro River, or along Carnadero Creek downstream from Highway 25, and managing a strip 50 feet wide outside of the woody riparian canopy so that tall forbs and shrubs are able to grow. This strip will be managed so that portions of it are disturbed (via mowing or herbicide use) every 3–4 years, with no more than half disturbed in a specific year, so that early successional conditions are maintained (with the caveat that this management regime may need to be adapted, as described in the preceding paragraph, so that suitable conditions are maintained). The linear footage of habitat that will be required to be managed in this way will equal the linear footage of lower Llagas Creek (on each side of the creek, downstream from Southside Drive, that is actually subjected to the proposed non-instream vegetation management activities and not managed as described in Mitigation Measure BIO-12A. If this mitigation option is selected, the SCVWD will prepare a HMMP for the mitigation site that includes the following:
 - a summary of impacts to least Bell's vireo habitat and populations, and the proposed mitigation;
 - a description of the location and boundaries of the mitigation site and description of existing site conditions;
 - a description of measures to be undertaken if necessary to enhance (e.g., through focused management) the mitigation site for the least Bell's vireo;
 - proposed management activities to maintain high-quality habitat for least Bell's vireos;
 - a description of species monitoring measures on the mitigation site, including specific, objective goals and objectives, performance indicators, success criteria, monitoring methods, data analysis, reporting requirements, and monitoring schedule. Determining specific performance/success criteria requires information regarding the specific mitigation site, its conditions, and the specific enhancement and management measures tailored to the mitigation site and its conditions. As a result, those specific criteria will be defined in the

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HMMP rather than in this EIR. Nevertheless, the performance/success criteria described in the HMMP will guide the mitigation to manage and protect habitat at least as suitable for use by the least Bell's vireo as the habitat that is impacted.

- a description of the management plan's adaptive component, including potential contingency measures for mitigation elements that do not meet performance criteria; and
- a description of the funding mechanism for the long-term maintenance and monitoring of the mitigation lands.

The HMMP will be provided to the USFWS and CDFG for review because this species is both state and federally listed. It is possible that this mitigation measure may be refined during the Section 7 consultation process with the USFWS (e.g., in the Biological Opinion covering Project effects on the least Bell's vireo) or by the CDFG during the Section 2081 consultation process (e.g., in an Incidental Take Permit), in which case the refinements required by these agencies would be implemented.

MM BIO-12 will mitigate impacts to the least Bell's vireo to less-than-significant levels by managing and protecting habitat suitable for use by this species, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this endangered species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

Mitigation Measure BIO-13: Implement Compensatory Mitigation for the Burrowing Owl

If a burrow that has been used for nesting by burrowing owls within the prior 3 years cannot be avoided (e.g., an occupied burrow is located on an eroding bank that must be repaired to maintain public safety), then the CDFG will be consulted to determine an appropriate relocation plan for the owl(s) in accordance with BMP GEN-7 and habitat compensation will be provided. If the habitat surrounding the burrow from which the owl is evicted remains suitable for use by burrowing owls following completion of the SMP activity (based on an assessment by a qualified biologist), SCVWD will have the option of either providing habitat mitigation off-site, as described below, or monitoring the work site to determine whether it is re-occupied by burrowing owls. If SCVWD documents nesting by burrowing owls within 2 years of completion of the maintenance activity in the vicinity of the impact site indicating that the activity did not have a long-term impact on the owls' use of the site, no further mitigation would be required.

If the maintenance activity will degrade habitat quality to the extent that maintaining owl use of the site is not feasible or ecologically preferable, in the opinion of a qualified SCVWD biologist, then off-site mitigation will be provided to compensate for the loss of occupied burrowing owl nesting habitat. California burrowing owl mitigation guidelines recommend that 9.75–19.5 acres of habitat be preserved and managed per occupied burrowing owl nest burrow (whether by a pair or singly) in mitigation sites (California Burrowing Owl Consortium 1993). The amount of mitigation habitat provided will depend on whether the mitigation habitat is occupied by burrowing owls (9.75 acres), adjacent to occupied habitat (13.0 acres), or suitable but unoccupied (19.5 acres). SCVWD will use these guidelines in determining the extent of mitigation habitat to be provided. The mitigation site must be located in Santa Clara County, or in areas of San Mateo or Alameda counties adjacent to San Francisco Bay, so that the mitigation supports the maintenance of South Bay burrowing owl populations.

This mitigation may be provided via the management of suitable habitat on SCVWD lands (either existing lands or lands that are acquired), purchase of credits in a mitigation bank (if one is available), or contribution of funds toward the management of the required amount of suitable habitat owned by another entity. If SCVWD provides habitat mitigation on its own lands, either on existing SCVWD lands or on lands that are acquired for mitigation purposes, an HMMP will be prepared detailing the areas to be preserved for owls; the methods for managing on-site habitat for owls and their prey; methods for enhancing burrow availability within the mitigation site (potentially including the provision of artificial burrows, although long-term management for ground squirrels will be important as well); measures to minimize adverse effects of development on owls on-site; and a monitoring program and adaptive management program. Determining specific performance/success criteria requires information regarding the specific mitigation site, its conditions, and the specific enhancement and management measures tailored to the mitigation site and its conditions. For example, performance criteria for a site where burrowing owls are known to occur may differ from those for an unoccupied site adjacent to occupied burrowing owl habitat. As a result, those specific

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criteria will be defined in the HMMP rather than in this EIR. Nevertheless, the performance/success criteria described in the HMMP will guide the mitigation to manage and protect high-quality habitat for burrowing owls, adequate to compensate for impacts.

The HMMP will be submitted to the CDFG for review. If a mitigation bank providing credits for burrowing owls is established within the aforementioned mitigation area (i.e., in Santa Clara County, or in areas of San Mateo or Alameda counties adjacent to San Francisco Bay), then mitigation may take the form of the purchase of credits equivalent to the number of acres of mitigation required.

MM BIO-13 will mitigate impacts to the burrowing owl to less-than-significant levels by managing and protecting habitat suitable for use by this species, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this rare species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

Mitigation Measure BIO-14: Implement Compensatory Mitigation for the Yellow Warbler

For impacts to occupied yellow warbler breeding habitat (i.e., riparian habitat known to have been occupied in recent years by the species) in areas for which mitigation has not already been provided for the 2002–2012 SMP, implementation of Mitigation Measure BIO-2 will be required to occur in areas where riparian habitat creation, restoration, and preservation will benefit yellow warblers (e.g., in relatively undeveloped reaches of creeks rather than in creeks surrounded closely on both sides by development), such that mitigation according to these measures occurs at a ratio of no less than 1:1 (on an acreage basis). SCVWD will determine whether impacted riparian habitat is suitable for this species on the basis of breeding-season surveys or comparison of habitat conditions to those in known occupied areas.

MM BIO-14 will mitigate impacts to the yellow warbler to less-than-significant levels by restoring habitat suitable for use by this species, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this rare species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

Mitigation Measure BIO-15: Provide Alternative Bat Roost

If a tree or structure containing a pallid bat maternity roost is to be removed by the Proposed Project, a qualified biologist will design and determine an appropriate location for an alternative roost structure. If a tree containing a maternity roost of this species is not removed, but SMP-related disturbance causes the abandonment of the roost site (even during the non-breeding season), then SCVWD may either monitor the roost site to determine whether the affected species returns to the roost, or construct an alternative roost. If SCVWD elects to monitor the roost and bats do not return within 1 year, then an alternative roost will be constructed.

A qualified biologist will determine the appropriate location for the alternative roost structure, based on the location of the original roost and habitat conditions in the vicinity. The roost structure will be built to specifications as determined by a qualified biologist, or it may be purchased from an appropriate vendor. The structure will be placed as close to the impacted roost site as feasible. SCVWD will monitor the roost for up to 3 years (or until occupancy is determined, whichever occurs first) to determine use by bats. If by Year 3 pallid bats are not using the structure, a qualified bat biologist, in consultation with the CDFG, will identify alternative roost designs or locations for placement of the roost, and monitoring of the new roost will occur for an additional 3 years (or until occupancy has been verified).

MM BIO-15 will mitigate impacts to the pallid bat to less-than-significant levels by providing alternative roosting habitat suitable for use by this species, thereby ensuring that the SMP does not substantially reduce the number or restrict the range of this rare species, have a substantial adverse effect on this special-status species, or impede the use of its nursery sites.

Mitigation Measure BIO-16: Invasive Species Management Program

The primary goal of the IPMP element of the SMP's compensatory mitigation package is to preserve and improve habitat within Santa Clara County streams and riparian corridors by reducing the population of invasive plant species. Controlling the spread of invasive plant species is a critical element in improving the

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ecological health of our streams and watersheds. Invasive plants thrive and spread aggressively negatively altering resource allocation regimes, wildlife patterns, soil stability and water quality thus degrading habitat quality and the overall ecological value of a site. In addition, invasive plants can exacerbate flooding and fire danger, undermine structural assets, and impact access to roads, levees and trails.

The IPMP will provide compensatory mitigation for SMP vegetation impacts to upland, riparian, freshwater and tidal wetlands by eliminating or significantly reducing the population of invasive plant species from these affected habitats. The IPMP will have a two-pronged approach:

- A systematic program to identify, prioritize, and control invasive plants throughout the Project Area
- An opportunistic, site-specific approach to remove invasive plants from individual work sites

The intent is that these two programs, operating at different yet complimentary spatial scales will enhance the overall ecological health of the SMP's creek ecosystems. For the opportunistic portion of the program, invasive plant management will focus on controlling species that are highly invasive at individual SMP work sites. For example, species such as giant reed, Cape ivy, Himalayan blackberry, tree of heaven, English ivy, and perennial pepperweed will be targeted for removal or control.

At the systematic program-area scale, the IPMP will develop a priority matrix of invasive plant species which integrates and weighs a variety of factors including: the 2006 CAL-IPC ratings, the anticipated rate of spread without management intervention, the feasibility of effective control, impacts to fish and wildlife, impacts to sensitive plant communities, increases in flood threat, increases to fire danger, aggressive growth patterns known to cause structural damage, and impediments to maintenance access. Priority target species will be selected annually from this matrix. The IPMP will then prioritize locations for control work where:

- the target species are degrading habitat for sensitive fish and/or wildlife species;
- invasive plant removal and subsequent native habitat colonization will improve connectivity between existing patches of high-quality habitat;
- the upstream extents of invasive plant species distribution (in the Project Area) will be targeted to reduce the potential for re-invasion of control sites via propagules dispersal from upstream source populations; and
- invasive plant control is technically feasible (e.g., because of access constraints) and can be accomplished while minimizing impacts to adjacent aquatic, wetland, and riparian habitats.

The targeted invasive species, and the location and extent of invasive species management, will be tied directly to the SMP's impacts in each habitat type, i.e., upland, riparian, freshwater and tidal wetland, so that the benefits of invasive species management will directly offset the adverse effects in these habitats. Integrated Vegetation Management techniques will be employed including mechanical, chemical, biological, and/or a combination of techniques to utilize the most effective method for each target species while providing the greatest amount of protection to environmental resources.

Invasive Plant Management Mitigation Requirement

Invasive plant management mitigation will be targeted at both on-site and off-site locations. For the larger systematic program, mitigation needs and credit will be determined annually, dependent on the proposed work for the year and the associated impacts expected to be incurred in each habitat type, i.e., upland, riparian, freshwater, and tidal wetland impacts. A proposal for mitigation credit and the associated acreage to be treated for this program will be submitted with the annual "Notice of Proposed Work."

The opportunistic effort will be variable each year dependent on the number of work sites where invasive plant removal is feasible. Mitigation credit accrued for this portion of the Program will be used to compensate for on-site vegetation impacts or for ongoing vegetation maintenance activities. Proposed mitigation credit for each project site will be submitted with the annual "Notice of Proposed Work."

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Determining specific performance/success criteria would require specific information regarding the invasive plant management sites and the invasive species being managed. As a result, those specific criteria will be defined in the IPMP rather than in this EIR. Nevertheless, the performance/success criteria described in the IPMP will guide the mitigation to manage invasive plants, adequate to compensate for impacts.

MM BIO-16 will mitigate impacts resulting from invasive species to less-than-significant levels by avoiding and controlling such invasions, thereby ensuring that the SMP does not substantially degrade the quality of the environment; reduce the number or restrict the range of endangered or threatened species; have a substantial adverse effect on special-status species, wetlands, or other sensitive natural communities; impede the use of nursery sites; or conflict with local or regional conservation plans as a result of such invasions.

Mitigation Measures: GCC-1A On-site or Off-site GHG Emissions Mitigation Program

In recent years, SCVWD has reduced its GHG emissions on several projects, including production of energy from SCVWD-owned renewable sources. As a result, SCVWD has GHG emissions credits that have not been previously applied as reductions/offsets for GHG emissions. SCVWD also may establish a new program to implement off-site GHG emissions reduction projects within the SFBAAB to obtain the new emissions credits. SCVWD will use existing or new emissions credits to reduce/offset GHG emissions from the SMP in exceedance of BAAQMD operational significance thresholds.

The total credits will be equal to the average emissions above the threshold over the lifetime of the SMP Update, or 30,402 metric tons (the average exceedance between the 2012 and 2020 estimated emissions, multiplied by 10 years), as adjusted based on the emissions reductions achieved by Mitigation Measure AIR-1A. The GHG emission reductions credits/projects will be from sources of emissions that are not required by any existing law to reduce their GHG emissions. Offsetting annual emissions inherently includes offsetting daily emissions. Therefore, no additional reductions/offsets will be required for daily GHG emissions. Documentation of any existing or new GHG reductions/offsets will be provided to the BAAQMD. In addition, any existing or new SCVWD GHG offset credits accounted for under this mitigation measure will be verified by the Climate Action Reserve so that the offsets are real, permanent, and verifiable.

This mitigation measure may not be feasible, based on costs, logistics, or other factors. Regarding logistics, whether the District could develop a new on-site or off-site mitigation program to effectively reduce emissions to less-than-significant levels in a timely manner is uncertain.

Mitigation Measures: GCC-1B: GHG Emissions Offsets

As an alternative to Mitigation Measure GCC-1A, or if SCVWD does not have sufficient GHG credits, SCVWD may purchase additional GHG emissions credits. The total credits will be equal to the average emissions above the threshold over the lifetime of the SMP Update, or 30,402 metric tons, as adjusted based on the emissions reductions achieved by Mitigation Measure AIR-1A.

For purchased credits, SCVWD will open a Climate Action reserve account or engage a private broker to facilitate the purchase of carbon offset credits from a voluntary market. Carbon offset credits purchased by SCVWD will be banked by the Climate Action Reserve, so that carbon offset credits purchased are real, permanent, and verifiable. Carbon offset credits will be measured in metric tons of CO₂e. Documentation of existing and/or purchased GHG offsets will be provided to the BAAQMD.