

**UPPER GUADALUPE RIVER  
FLOOD RISK MANAGEMENT PROJECT  
San José, California**

**Clean Water Act Section 401 Coordination and  
Certification**

**Appendix C4**

**DRAFT INTEGRATED  
GENERAL REEVALUATION REPORT  
& SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT**

**November 2022**



**US Army Corps  
of Engineers®**  
San Francisco District



# Upper Guadalupe River Project Water Quality Control Summary

## ***Coordination Summary***

The Project Delivery Team (PDT) has been regularly coordinating with the San Francisco Bay Regional Water Quality Control Board (Water Board) both in one-on-one meetings and as part of the Resource Agency Working Group (RAWG) throughout the process of this feasibility study. The Water Board staff have generally been supportive of the direction the team is going with proposing natural and nature-based features in Reaches 7 and 8 and more traditional flood risk management measures on Ross and Canoas Creeks. The primary concern that Water Board staff have expressed is how the project will deal with mercury-containing soils onsite, but they have expressed that there are multiple practicable paths forward, incorporating lessons learned during construction of Reaches 10B and 12, and other projects in the region. They have expressed that it is possible that this project will be able to be covered by the existing Water Quality Certification issued in December 2003, the provisions of which are outlined below, or that they would issue a new certification with provisions very similar to the existing one. They plan to document their official path forward with a comment letter responding to the draft report.

## ***Standard Provisions***

- Construction in the Guadalupe River, below ordinary high water (2.33 year flood recurrence interval) will be limited to the summer dry season between June 1 and October 15 of each year.
- The Discharger is responsible for correcting any problems which arise in the event of Project failure, that result in an unauthorized release of waste or wastewater.
- The Discharger shall comply with and submit copies of all necessary approvals and/or permits.
- The Discharger shall ensure that all individuals working on Project work sites, are familiar with the contents and requirements of this Order, and all relevant plans and BMPs.
- The Discharger shall permit the Board: entry on to the Project premises, access to copy any records required to be kept under the terms and conditions of this Order, access to inspect any treatment equipment, monitoring equipment or monitoring method required by this Order, and access to sample any discharge or surface water covered by this Order.

## ***Construction Provisions***

- Prior to Project construction, the Discharger shall submit a detailed design and construction schedule to the Executive Officer for approval.
- Prior to implementation of each of the designated Project reaches, the Discharger shall submit 65% design plans to the GWIWG for review.
- The Discharger shall conduct all construction activities in accordance with plans listed in Finding No.17 of this Order.
- The Discharger may temporarily stockpile excavated material prior to disposal or reuse provided that appropriate BMPs are implemented to protect water quality and beneficial uses.

- Prior to excavation of sediment, the Discharger shall characterize material to be removed using protocols described in the Santa Clara Valley Water District Sediment Characterization Plan dated December 2001.
- The Discharger shall ultimately dispose of dewatered excavated material at a permitted landfill, upland disposal site, or at a reuse site
- A delineation of existing jurisdictional waters of the State and United States shall be conducted by a biologist prior to construction of impoundment at the site.
- The Discharger shall implement BMPs to prevent pollutants from draining into waters of the State, including the discharge of pollutants from temporary stockpiles of excavated material, during transport of excavated material, from application of herbicides and pesticides, and from vegetation and construction related materials.
- The Discharger shall remove and properly dispose of any wastes that are discharged at any Project work sites in violation of this Order.
- The discharge of any hazardous, designated or non-hazardous shall be conducted in accordance with applicable state and federal laws and regulations.
- The Discharger shall file with the Board a report of any material change or proposed change in the character, location, or quantity of this waste discharge.
- To prevent surface erosion and sedimentation, disturbed soil related to Project activities shall be winterized consistent with protocols described in the Regional Water Quality Control Board Erosion and Sediment Control Field Manual dated August 2002.
- The Discharger shall divert any flow at the site around the active Project work area in a non-erosive manner using a pipe or other BMP measure such that flows do not cross active work sites.
- If dead or dying fish are observed within 1,000 feet of Project work activity, the Discharger shall immediately assign a qualified biologist to investigate the cause of the problem and define an acceptable corrective action plan.
- The project shall comply with the dewatering discharge requirements shown in the Order.

***Mitigation, Monitoring, and Reporting Provisions***

- **Project Impact Limits:** Project impacts shall not exceed amounts listed in Table 1 of this Order. Any potential impacts greater than those listed in Table 1 shall be submitted to the Executive Officer in advance to determine whether impacts can be avoided, and whether additional unavoidable impacts will require environmental review under CEQA, compensatory mitigation, or amendments to this Order.
- **Mitigation and Monitoring Plan Implementation:** The Dischargers shall implement the Mitigation and Monitoring Plan referred to in Finding No. 16 above.
- **Achievement of Measurable Objectives:** One year following the achievement dates of the Measurable Objectives of the Mitigation and Monitoring Plan referred to in Finding 16 above, the

Discharger shall submit a technical report, acceptable to the Executive Officer, documenting achievement of the measurable objectives or documenting that acceptable progress has been made towards achievement of the Measurable Objectives.

- **Monitoring Program:** By March 31 of each year, the Discharger shall submit a technical report acceptable to the Executive Officer, containing the results of the monitoring program for the previous year.
- **Mitigation Success Status Report:** By August 31 of each year, the Discharger shall submit a technical report acceptable to the Executive Officer, containing the assessment of monitoring results for the previous year, and Adaptive Management Team (AMT) recommendations for monitoring program modification or corrective measure implementation, if appropriate.
- **Revised Mitigation:** If compensatory mitigation has not developed in accordance with the measurable objectives and other requirements of the MMP, the Discharger shall prepare a revised mitigation plan following review by the Adaptive Management Team and acceptable to the Executive Officer, addressing corrective action, outlining additional monitoring, or proposing new mitigation that will comply with the MMP mitigation objectives.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

ORDER R2-2003-0115

WASTE DISCHARGE REQUIREMENTS AND WATER QUALITY CERTIFICATION FOR:

**SANTA CLARA VALLEY WATER DISTRICT AND UNITED STATES ARMY CORPS  
OF ENGINEERS UPPER GUADALUPE RIVER FLOOD CONTROL PROJECT, CITY  
OF SAN JOSE, SANTA CLARA COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter Board), finds that:

1. **Scope of Order:** This Order establishes requirements for the Upper Guadalupe River Flood Control Project as described in Finding No.11 below (hereinafter the Project), to be constructed by the U.S. Army Corps of Engineers and Santa Clara Valley Water District from 2004 to 2015 (The U.S. Army Corps of Engineers and the Santa Clara Valley Water District are hereinafter referred to as the Discharger).
2. **Application:** The Discharger applied to the Board on July 16, 1998, for Water Quality Certification under Section 401 of the Clean Water Act, and for waste discharge requirements (WDRs), or waiver thereof, under the Porter-Cologne Water Quality Control Act, for the Project. The Discharger has applied to conduct activities to provide protection from the computed 100-year flood along the upper Guadalupe River and the lower reaches of its tributaries, Ross and Canoas Creeks. The Guadalupe River is a tributary to South San Francisco Bay.
3. **Project Location:** The Project would involve modifications along 5.7 miles of Guadalupe River channel between Interstate 280 in downtown San Jose, and Blossom Hill Road upstream; 0.3 mile of Canoas Creek between Guadalupe River and the end of Nightingale Drive; 1 mile of Ross Creek between Guadalupe River and Jarvis Avenue; and removal of 4 existing fish barriers upstream of the Project (Appendix A). The Project has been divided into seven main reaches, with sub-reaches, including Ross and Canoas Creeks, for a total of thirteen separate reaches (listed from downstream [north] to upstream [south]), and include:
  - Reach 6: I-280 to Southern Pacific Railroad Crossing,
  - Reach 7: Southern Pacific Railroad (SPRR) to Union Pacific Railroad (UPRR) Crossings,
  - Reach 8: UPRR to Willow Glen Way,
  - Reach 9: Willow Glen Way to Curtner Avenue,
  - Reach 10A: Curtner Avenue to the confluence with Canoas Creek,
  - Reach 10B: Confluence with Canoas Creek to Koch Lane,
  - Reach 10C: Koch Lane to Capitol Expressway;
  - Reach 11A: Capitol Expressway to Bryan Avenue,
  - Reach 11B: Bryan Avenue to the confluence with Ross Creek,
  - Reach 11C: Confluence with Ross Creek to Branham Lane,

Reach 12: Branham Lane to Blossom Hill Road,  
Canoas Creek: Confluence with Guadalupe River to end of Nightingale Drive,  
Ross Creek: Confluence with Guadalupe River to Jarvis Avenue.

Fish barriers will be removed at the following locations:

- Guadalupe Creek, Stream Gage Station 43
- Guadalupe Creek, Concrete U-Frame Channel upstream of Pheasant Creek
- Alamitos Creek, Mazzone Drive Gabion Structure
- Alamitos Creek, Stream Gage Station 16

**The Major Elements of the Project Include:**

- Bypass channels set back from the east bank of the river designed to transport flows greater than the computed 2-year frequency event in Reaches 6, 7 and 8, and sections of Reaches 9 and 11A;
- Excavated east bank floodplain benches between the active channel and bypass channel to improve stream functions, and habitat while avoiding impacts to existing riparian vegetation to the maximum extent possible;
- Channel widening, excavation or floodplain bench creation in Reaches 10A, 10C, 11A, 11B, and 11C;
- Construction of west and east bank biotechnical repairs to improve eroding vertical banks and create plantable surfaces where opportunities allow;
- Construction of instream grade control structures to help control bed incision and resulting bank instability, to improve gravel retention in pool dominated reaches, and to improve instream habitat complexity;
- Construction of a bypass outlet weir at the lower end of Reach 6 to allow flood flows to reenter the river at the upstream end of the “Downtown” Guadalupe River Project;
- Construction of west bank engineered levees for Reach 6 and the lower half of Reach 10B;
- Construction of floodwalls in Reach 7 on the east bank of the proposed bypass channels, and portions of Reach 10B upstream of the engineered levees;
- Construction of an overflow inlet weir at the upper end of Reach 8 to allow flows greater than the 2-year frequency to start entering the bypass channel;
- Retaining cribwall lining for outer banks of widened channel and widened floodplain channel areas throughout the Project;
- Construction of continuous maintenance roads and ramps where accessible;
- Removal and construction of new bridges, widening of some bridges, construction of new box culverts, and modification of existing culverts;
- A maintenance program that includes erosion protection, vegetation removal, and sediment management;
- Revegetation of areas where possible and where opportunities are identified;
- Creation of 1.47 acres of freshwater wetland, 20.89 acres of riparian forest, 4,886 linear feet of shaded riverine aquatic, and 1,720 linear feet of undercut bank habitats to mitigate for Project impacts;
- Removal of invasive non-native vegetation in various reaches;
- Removal of existing fish barriers within the Guadalupe River watershed to provide a contiguous river system where steelhead trout, Chinook salmon and other historical

native fishery species can migrate and spawn without being hindered by man-made impassable barriers.

4. **Project Purpose:** The Project proposes to modify the Guadalupe River between Interstate 280 to Blossom Hill Road, to contain the computed 100-year frequency flood and prevent flood damages to surrounding neighborhoods consistent with Federal Emergency Management Agency requirements. The proposed design would convey 11,400 cubic feet per second (cfs) from Blossom Hill Road to Ross Creek, 12,400 cfs from Ross Creek to Canoas Creek, and 14,600 cfs from Canoas Creek to Interstate 280, within the active channel and the proposed bypass channel without flooding the surrounding areas. The proposed Project would also provide access roads, which are needed to perform regular maintenance such as vegetation control, erosion repair, and debris removal. The objectives of the Project are to reduce flood damage and improve the ecological and habitat functions of the upper Guadalupe River.
5. **Project Need:** Accounts of flood damage from the upper Guadalupe River date back to 1777, when San Jose was established as a Spanish pueblo. Recent damaging floods have occurred in 1980, 1982, 1983, 1986, 1995 and 1998. River flooding has caused bank erosion, debris accumulation, sediment deposition, creek incision, and damages to homes, businesses, roadways and other facilities. Guadalupe River flooding has inundated as much as 5,200 acres during the most severe floods. In 1995, severe flooding in upper Guadalupe River damaged more than 150 homes. State Highway 87 and the parallel light rail line (both major commuter thoroughfares) were also closed by the 1995 and 1998 floods.

The principal causes of this flooding were: (1) development practices have allowed development within the natural flood plain of the river system, and (2) development has occurred in a manner that increased the amount of land covered with impervious surfaces, thereby reducing natural percolation into the ground, increasing the rate of stormwater runoff and increasing peak flood flows, exceeding the flow capacity of the channel. Development in the watershed is estimated to have increased peak flows by 30 to 50 percent over pre-development peak flows.

Under existing conditions, a computed 100-year flood on the upper Guadalupe River would inundate approximately 7,200 residential units, six public schools, 340 acres of commercial and industrial properties, and 114 acres of agricultural land. A total of approximately 7,500 buildings and 2,200 acres would be flooded, with total flood damages estimated at \$280 million.

### **Related Projects and Efforts**

6. **Flood Control Projects:** Two additional flood control projects have been approved and are under construction downstream of the Project (Appendix B). The Guadalupe River Project (also known as the Downtown Project) was permitted by Board Order No. 01-036 on March 21, 2001, to convey 17,000 cfs through the downtown San Jose portion of the Guadalupe River upon completion in 2004. The Lower Guadalupe River Flood

Protection Project was permitted by Board Order No. R2-2002-0089 on September 18, 2002, to convey 18,350 cfs at the Town of Alviso upon completion in 2004.

**Stream Maintenance Program:** Board Order No. R2-2002-0028, for the Santa Clara Valley Water District Multi-Year Stream Maintenance Program (SMP), was adopted on February 27, 2002, to permit the Discharger to conduct stream maintenance activities throughout the Santa Clara Basin. Permitted activities include sediment removal, vegetation management, bank protection, and specific minor maintenance activities.

**Guadalupe Watershed Integration Working Group:** The Guadalupe Watershed Integration Working Group (GWIWG) was established in early 2002, to review and discuss existing and future projects in the Guadalupe Watershed, with the goals to improve project coordination and maximize environmental benefits to the Guadalupe River. GWIWG participants have included representatives from federal, state, and local agencies as well as the public and hired engineering and environmental consultants (Appendix C). The Upper Guadalupe River Project Design Review Team (DRT) was established as a GWIWG sub-committee to review the design and any proposed modifications to the Locally Preferred Project (LPP) described in the Final Environmental Impact Report/Environmental Impact Statement (FEIR/EIS). Both the GWIWG and the DRT will continue to serve as advisory committees for the Discharger during the course of Project design, construction, and monitoring.

**Adaptive Management Team:** As part of the Guadalupe River Project, Order No. 01-036, an Adaptive Management Team (AMT) was developed, composed of representatives of the Discharger, City of San Jose, Regional Board, U.S. Fish and Wildlife Service, NOAA Fisheries, California Department of Fish and Game, Guadalupe-Coyote Resource Conservation District, Pacific Coast Federation of Fisherman's Association, and Trout Unlimited. As stated in Order 01-036, the AMT was developed to "...assure that mitigation measures successfully reestablish ecological functions and habitat values. The AMT reviews monitoring results to determine whether the measurable objectives established by the AMT have been achieved. If a measurable objective is not achieved, the AMT determines whether the indicator used is appropriate, and, if the indicator is determined to be inappropriate, identifies another indicator and measurable objective. If the AMT determines that the indicator is the correct one to be using, the AMT identifies a remedial action to be implemented to ensure mitigation success. Monitoring then continues until the measurable objective is met." The Project, under the direction of the GWIWG, will be integrated into the AMT purview.

The Executive Officer will consider the recommendations of the AMT, including the Discharger, in regard to monitoring program modifications or corrective implementation and, if appropriate, will modify the monitoring program of this Order or establish a compliance schedule for corrective action measure implementation.

**Fisheries Aquatic Habitat Collaborative Effort:** The Fisheries and Aquatic Habitat Collaborative Effort (FAHCE) was initiated in November 1997 by the Discharger and the California Department of Fish & Game (CDFG) in an effort to resolve a water rights complaint filed before the State Water Resources Control Board (SWRCB) in July of 1996 (Guadalupe-Coyote Resource Conservation District, Complaint vs. Santa Clara



Valley Water District, Respondent). The FAHCE process brought together the Discharger, CDFG, US Fish & Wildlife Service (USFWS), National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries), Natural Heritage Institute (NHI), Audubon Society, City of San Jose (CSJ) and the Board in a collaborative process to develop a fisheries management plan for the Coyote, Guadalupe and Stevens Creek watersheds.

In May of 2003 the participants of the FAHCE initialed a draft settlement agreement that includes a comprehensive fisheries management plan designed to protect and enhance habitat for steelhead trout and Chinook salmon. The draft agreement also establishes up to \$126 million in available funding to implement the plan over a thirty-year period. The draft agreement also includes provisions for the establishment of an adaptive management team to guide future studies and provide input on implementation of the various measures contained in the settlement agreement.

Parties initialing the draft settlement included the Discharger, CDFG, USFWS, NOAA Fisheries, GCRC, Trout Unlimited, Pacific Coast Federation of Fly Fishermen's Associations, California Trout, Urban Creeks Council and the Northern California Council of Federation of Fly Fishers.

The Discharger is currently preparing the environmental documentation necessary to finalize the draft settlement agreement. This includes a Programmatic EIR/EIS, a Habitat Conservation Plan and a Petition for Change before the State Water Resources Control Board.

The current project schedule calls for completion of these efforts by 2005 with implementation of the fisheries management actions contained in the settlement agreement to follow.

### **Project Setting and History, Modification Development, Design and Construction**

7. **Project Setting and History:** The Guadalupe River is located in the Discharger's Central Flood Control Zone. The upper watershed is located in the eastern Santa Cruz Mountains near the summit of Loma Prieta. The Guadalupe River begins at the confluence of Alamitos Creek and Guadalupe Creek and flows northerly through downtown San Jose to San Francisco Bay. Calero, Guadalupe, and Almaden Reservoirs are located on tributaries to the Guadalupe River. These reservoirs are built for water conservation purposes but also provide some incidental flood control benefit.

On its way to the San Francisco Bay, the Guadalupe River is joined by Ross, Canoas and Los Gatos Creeks. Vasona Reservoir, Lexington Reservoir and Lake Elsmann are located upstream on Los Gatos Creek. The total drainage area of the Guadalupe River watershed is approximately 170 square miles and is the second largest watershed in Santa Clara County after Coyote Creek.

Significant issues in the Guadalupe River watershed are the threat of water quality degradation in the streams, degraded aquatic and riparian habitats, and the lack of adequate capacity to safely convey the computed 100-year flood flow.

In recent years, activities related to development, such as agricultural activities, industrial spills, transportation activities, leaking underground storage tanks, urban runoff, illegal dumping and nonpoint source pollution, have threatened surface water and groundwater quality in the Guadalupe River watershed.

Other significant problems in the watershed are intensive ongoing maintenance operations, erosion problems, sedimentation problems, fish passage problems, and local drainage problems. In the last 5 years, the Discharger has spent approximately \$540,000 on erosion and related repairs in the Guadalupe River watershed. Erosion repair and sediment management is continuing in a site-by-site fashion.

In 1960, the Discharger prepared an Engineer's Report on Proposed Improvements for the Central Flood Control Zone. The study area for the Guadalupe River extended from San Francisco Bay to Branham Lane. This 18-mile length of Guadalupe River was divided into seven reaches, each about 2.5 miles long. Engineering design, construction staging and financing were outlined in detail. Construction was proposed to be in two phases. The first phase consisted of constructing levees downstream of Highway 17, excavating the channel throughout its length and adding drop structures at various locations. The channel capacity would be increased to 12,000 cfs.

The second phase proposed to enlarge bridges and culverts and concrete line the channel. Capacity would then be adequate for the design flow of 25,000 cfs. None of the proposed improvements were constructed except a portion of phase one adjacent to the San Jose Airport. In this reach, the channel was excavated and earth levees were added.

In August 1970, the Discharger issued a "Report on Proposed Improvements on Guadalupe River and Guadalupe Creek." The reach of Guadalupe River from Branham Lane to the confluence with Guadalupe Creek was proposed to be an excavated earth channel with drop structures. Construction plans were never developed.

A plan was prepared in December 1971 proposing improvements from Koch Lane to Branham Lane. This plan called for a combination of concrete lining, as in the 1960 report, and semi-natural areas. In January 1972, the Discharger's Board of Directors directed its staff to develop plan lines as a guide for future dedication requirements when development occurred.

In October 1975, an Engineer's Report and Final EIR were completed by the Discharger for improvement from Blossom Hill Road and upstream to Coleman Avenue, consisting of channel enlargement with replacement of one drop structure and a percolation pond. Construction began in 1976 and was completed in the same year.

In April 1977, the Discharger studied an off-stream storage alternative in response to opposition to the floodwalls alternative by residents in the reach from Willow Glen Way

to Curtner Avenue. This alternative consisted of expanding the existing Guadalupe River percolation ponds downstream of Blossom Hill Road to reduce the 100 year flood peak. Channel modifications would still be necessary through most of Guadalupe River. This alternative was not feasible due to the high cost and the inadequate reduction of flow.

The most recent study done by the efforts of the Discharger for the Upper Guadalupe River was the August 2001 FEIR/EIS. Project alternatives were considered; environmental impacts were assessed and mitigation for those impacts was developed accordingly.

8. **Design Improvement Modification Development:** The Locally Preferred Project (LPP) described in the FEIR/EIS dated November 1999 is referred to as the Channel Modification Alternative and was designed to contain the computed 100-year frequency flood in the Guadalupe River while avoiding and minimizing impacts to channel stability and existing riparian vegetation. Included in this design is the construction of bypass channels, in some reaches, that convey flood flows around the existing riparian corridor and reduce erosive flows in the active channel. Channel widening, and levee and floodwall raising are also proposed. Several other project alternatives were considered, including the Fluvial Geomorphological Alternative, which was designed to restore portions of the river to a more stable, and ecologically improved condition by creating a sinuous channel and adjacent floodplain for all reaches. As designed, this alternative was determined to have significant impacts on existing riparian vegetation and shade, resulting in an unacceptable impact to water temperature critical to protected anadromous fisheries in the river. As a result, the Discharger selected the Channel Modification Alternative as the LPP to convey flood flows while avoiding and minimizing impacts to existing riparian vegetation.

In February 2002, the GWIWG held the first of several meetings to identify design modifications that improve ecological conditions of the Guadalupe River and avoid any additional significant impacts to the Guadalupe River. Over the course of the following eighteen months, several proposals for modifications were discussed, including major modifications to the east bank where adjacent properties had been acquired for the bypass, and in-stream features to enhance eroding banks and areas of bed incision. Amongst these proposals were the excavation of a continuous floodplain bench in place of proposed bypass channels in Reaches 6, 7, 8, parts of 9, and 11A, east and west bank biotechnical improvements, and grade control structures. Goals of these modifications included improving bank stability and reducing bed incision, increasing residence time of sediment and nutrients in the system, increasing channel and riparian habitat, utilizing available right-of-way as a more natural flood bench instead of an armored bypass channel, and decreasing required maintenance.

In an effort to identify the feasibility of the continuous east bank floodplain bench modification, additional field data were collected, hydraulic capacity remodeled, and site visits conducted. In addition, the following stream function and habitat improvement opportunities and constraints were identified through GWIWG discussions:

**Opportunities:**

- Decreased erosive flows in the active channel, reducing bed incision and bank instability,
- Increased opportunity for improvements to unstable sections of the banks by constructing plantable surfaces for SRA and riparian vegetation,
- Increased opportunity for wetland, riparian, and streambed habitat and associated benefits to aquatic and terrestrial species,
- Increased potential to retain gravels that are beneficial to salmonids in the active channel, and fine sediment and nutrients on the floodplain bench,

**Constraints:**

- Increased impacts to existing riparian vegetation and loss of native soils,
- An existing underlying clay layer that could act as a root and water barrier to riparian plantings if the east bank floodplain bench were excavated and native soils removed,
- Reduced flood conveyance capacity without narrow and smooth bypasses, resulting in a need to maintain a smoother floodplain bench with a 25-foot wide riparian corridor,
- Increased erosion potential on the floodplain bench that would result in a need to armor the surface with rock,

Ideas for overcoming constraints to the continuous east bank floodplain bench were considered and guided by the goal of creating long-term benefits that outweigh any additional short-term impacts. Increased temporary impacts to riparian and SRA vegetation due to the excavation of a floodplain bench would be minimized to a less than significant extent by varying the height of the floodplain bench cut to retain valuable species. Where clay layers were found to have potential to inhibit root growth and groundwater availability for riparian and SRA vegetation, opportunities for special construction measures, like over-excavation and backfilling with native soils would be explored.

Hydraulic modeling demonstrated that the continuous floodplain bench would not convey 100-year flood flows as effectively as the bypass channel and that flood flows would likely erode the floodplain bench surface. As a result, a smoother ground surface would need to be maintained, limiting the riparian vegetation corridor to 25 feet in width from the active channel, and the floodplain bench would need to be armored. Limiting the establishment of riparian forest to a 25-foot wide corridor and armoring the floodplain bench were considered to be unacceptable constraints of the continuous east bank floodplain bench by GWIWG participants.

The LPP design, including the bypass, will be modified to include opportunity based excavated east bank floodplain bench features, east and west bank biotechnical improvements, and grade control structures. Collectively, these features are referred to as “modifications”. Modifications will improve current ecological conditions in the Guadalupe River and will not result in new significant impacts or an increase in significant impacts described in the FEIR/EIS. Location and design of these modifications will be based on design improvement studies and site selection criteria

developed by the GWIWG. The LPP, with modifications, is the Improved Channel Modification Alternative and is referred to as “the Project” in this Order. The Project is designed to convey the computed 100-year flood while achieving the goals and opportunities described above. Modifications to the LPP are consistent with the Channel Modification Alternative described in the FEIR/EIS and includes modifications designed to improve beneficial uses of the Guadalupe River.

Focused design related studies are needed before Project modifications can be designed in detail and constructed, but the time needed to conduct these studies and develop modification design details will result in Project delays that would conflict with existing commitments. The Clean Safe Creeks and Natural Flood Protection Act (Measure B) was approved by the voters of Santa Clara County in 2000 to provide tax based funding for flood protection along Santa Clara County streams like the upper Guadalupe River. Under Measure B, the Discharger committed to construct the LPP by 2015, requiring that construction of some mitigation measures be done in advance of features that will adversely impact riparian and aquatic habitat. In order to complete the Project by 2015, it is necessary to begin planting riparian mitigation now so that vegetation will be sufficiently mature at the time of channel construction to compensate for adverse impacts, particularly potential water temperature increases. In addition, federal funding (through the U.S. Army Corps of Engineers), at least equal to the locally contributed share, will be required to complete the Project. Current federal budget deficits have severely limited the amount of federal funding available for new projects. Projects with unresolved environmental concerns are unlikely to receive federal funding. Regional Board approval will demonstrate to federal decision makers that no significant unresolved environmental issues remain.

In an effort to meet flood protection commitments to the residents of San Jose, begin implementation of early mitigation plantings, and secure federal funding for the Project, GWIWG members agreed that the Project should be recommended for approval and that design modifications be confirmed before construction through Project improvement studies required in Provision No. 32 of this Order. The GWIWG will continue to act as a review body for this effort, with final modification design recommendations submitted to the Executive Officer for approval for reaches subject to modifications.

9. **Design Improvement Modification Process and Construction Approach:** To begin the Project in a manner that will meet the timing commitments and funding requirements stated above, and to furthermore design a project that provides flood protection and improved ecological benefits to the Guadalupe River, the Discharger has committed to an implementation schedule that begins construction of the LPP design in advance of design modifications described in this finding. Project studies described in Provision No. 32 of this Order will be implemented in accordance with the schedules described, and where specified, will be conducted prior to design and construction of modifications. Modification designs will be reviewed by the GWIWG to ensure consistency with the Order, and submitted with 65% design plans for each reach to the Executive Officer for approval prior to construction. General descriptions of design improvement modifications, design studies, and construction scheduling are as follows:

- **Floodplain Benches:** Opportunity based eastbank floodplain benches will be excavated in Reaches 6, 7, 8, 9 (at Pine Avenue and Malone Road), and 11A, between the active channel and the bypass. Floodplain benches included in other reaches have already been proposed as part of the LPP. Prior to final design for each reach, the Discharger will conduct studies described in Provision No. 32 A (phase one), B, C, D, and G of this Order. Ecological and flood protection criteria will be developed to assess the design of floodplain benches and to determine whether other channel modifications such as biotechnical bank treatments, reducing the elevation of the area between the active channel and the bypass, or laying back slopes, are more appropriate at some locations. Modifications will be recommended when there is substantial agreement among GWIWG participants that they would likely result in clear improvement over the current Project design, and are consistent with modification goals described above in paragraph 2 of Finding No. 8 of this Order. Areas will be identified where there are opportunities to save valuable SRA trees by varying the bench elevation and leaving intermittent berms. Soil conditions of floodplain benches will be assessed for riparian revegetation potential and for implementation of soil amendment methods to provide suitable planting conditions (i.e. replacement of 3 to 6 feet of native soil over the existing clay layer to provide suitable planting media).
  - **West and East Bank Improvements:** Bank improvement methods that maximize the use of natural materials and grading of steep surfaces will be implemented on the east and west banks where unstable or steep banks can be modified to provide plantable surfaces and improve instream and stream-side habitat and water quality improvements. Prior to final design for each reach, the Discharger will conduct studies described in Provision No. 32 A (phase one), B, C, D, and G of this Order to help determine locations and suitable methods for bank improvements.
  - **Grade Control Structures:** Grade control structures will be used to address channel incision and resulting bank erosion, to improve existing channel bed conditions by incorporating gravel, and cobble augmentation for sediment starved reaches and by causing upstream deposition and downstream pool scour. Currently, a significant percentage of the Project is dominated by long pools and lacks the conditions to retain gravel which forms riffles, runs, and other channel bed features important to improving water quality and aquatic habitat. Prior to final design of each reach, the Discharger will conduct studies described in Provision No. 32 A (phase one), B, C, D, and G of this Order to identify appropriate designs and locations of grade control structures.
  - **Project Scheduling:** As described in Appendix D, Project construction will begin with Reaches 10B, 12, and the fish barrier removal sites. Project reaches requiring design modification studies will not begin construction until after the Discharger has conducted design modification studies as described in this finding and in Provision No. 32 of this Order.
10. An independent panel with expertise in the fields of geomorphology and biology will be convened to review the LPP, including the FEIR/EIS and all supporting documents, as well as the modifications described in Finding No. 9 and design improvement studies described in Provision No. 32 of this Order. Such peer review of the LPP and the modifications will help answer the following questions in advance of the additional

technical studies required by this Order, including those specified in Provision No. 32 of this Order.

- a. The existing Project record includes the FEIR/EIS as well as the Sediment Transport Modeling Study of the Upper Guadalupe River, Phase 1, 1993, and Phase 2, 1996, by Phillip Williams and Associates. Does the Study Required by Provision 32A adequately complement this existing record for the purpose of the Project design improvement process?
- b. What, if any, technical study additional to those required by Provision No. 32 of this Order should undertaken prior to final design and construction of the Project?
- c. What performance criteria should be used for determining location and design of floodplain bench and biotechnical bed and bank modifications to the LPP, as provided in Provision No. 32 of this Order?
- d. What are the geomorphic and biological benefits to incorporating floodplain bench and biotechnical bed and bank features to the LPP?
- e. What, if any, indicators should be surveyed and measurable objectives established, additional to those specified in Table 1, to provide appropriate and sufficient monitoring protocols in the MMP as described in Finding No. 16 of this Order?

### **Project Description**

For each reach, elements of the LPP are described first followed by modifications included in the Project approved by this Order. Typical cross-sections are provided in Appendix E

11. **Reach 6:** I-280 to Southern Pacific Railroad Crossing. Project elements will include a bypass channel, lined with stepped gabions, at a slope of 1H:1V, on the east side of the existing river. The bypass channel will be approximately 15 feet deep and 85 feet wide with two 2-percent cross slopes towards the center of the channel, ensuring low-frequency flows to be concentrated in the middle of the channel for drainage. An 85 linear feet 4-foot drop structure, just upstream of Interstate 280, will be constructed of mattress gabions forming the confluence of the bypass and the active channel. A new bridge will be constructed east of the existing bridge, over the bypass channel, to accommodate pedestrian and vehicular traffic along West Virginia Street. Maintenance roads and ramps will be located at specific locations to be determined. All maintenance roads and ramps will be surfaced with 6 inches of aggregate. Construction of Highway 87 resulted in the construction of a levee along the west bank in this reach. If soil investigations confirm that the existing levee is stable, the levee will be raised to meet FEMA requirements; if the levee is unstable, it will be reconstructed. A 12-foot wide maintenance road will be constructed on top of the west levee. The bypass channel will remove 54 properties, one partial backyard area, and eliminate McLellan Avenue. The intersections at West Virginia Street and Harliss Avenue and at McLellan and Edwards Avenues will be modified.

**Modifications:** Eastbank floodplain benches will be excavated between the natural channel and the bypass channel at locations to be determined. The natural stream will remain undisturbed except where biotechnical bank improvement sites are identified. To help reduce further channel incision, and to improve existing pool dominated channel conditions, grade control structures will be constructed at locations to be identified.

**Reach 7:** SPRR to UPRR Crossings. Project elements include a four-cell (20 foot wide x 17-foot high each cell) reinforced concrete box (RCB) culvert under the UPRR tracks. The bypass channel east of the river continues for the entire reach. From SPRR to Willow Street, the bypass channel bottom width varies from 65 to 85 feet under the Highway 87 Bridge. Stepped gabions are proposed on the banks of the bypass with a slope of 1H:1V, and rock will be placed on the bottom of the bypass channel with two 2-percent cross slopes towards the center of the channel, ensuring low-frequency flows to be concentrated in the middle of the channel for drainage. A new bridge will be constructed over the bypass channel at Willow Street. Maintenance roads and ramps will be located at specific locations to be determined. All maintenance roads and ramps will be surfaced with 6 inches of aggregate. A new bridge will be constructed over the bypass channel at Alma Avenue. A short floodwall will be constructed just downstream of Alma Avenue along Lelong Street for 300 feet, since the existing level of an adjacent parking lot is lower than the creek's existing east bank. There will also be a floodwall along the Elk's Lodge property.

**Modifications:** Eastbank floodplain benches will be excavated between the natural channel and the bypass channel at locations to be determined. The natural stream will remain undisturbed except where biotechnical bank improvement sites are identified. Depending upon the additional cost, the existing Alma Avenue Bridge may be replaced with a new bridge that will extend from the natural channel to the bypass channel. To help reduce further channel incision, and to improve existing pool dominated channel conditions, grade control structures will be constructed at locations to be identified.

**Reach 8:** UPRR to Willow Glen Way. Project elements include a bypass channel, east of the river, that has an 85-foot bottom width with 1H:1V stepped gabion side slopes. The bottom of the bypass will be rock-lined with two 2-percent cross slopes towards the center of the channel, ensuring low-frequency flows to be concentrated in the middle of the channel for drainage. The abandoned UPRR rails and bed will be removed prior to construction of the bypass channel. A 160 linear feet bypass inlet control weir will be constructed along the east bank of the river, just downstream of Willow Glen Way, to allow for flows greater than 1500 cfs to enter the bypass channel. Existing sidewalks and street trees on Mackey Avenue will not be affected by the project. Maintenance roads and ramps will be located at specific locations to be determined. All maintenance roads and ramps will be surfaced with 6 inches of aggregate.

**Modifications:** Eastbank floodplain benches will be excavated between the natural channel and the bypass channel at locations to be determined. The natural stream will remain undisturbed except where biotechnical bank improvement sites are identified. To help reduce further channel incision, and to improve existing pool dominated channel conditions, grade control structures will be constructed at locations to be identified.

**Reach 9:** Willow Glen Way to Curtner Avenue. Project elements include replacement of the Willow Glen Way Bridge. From Willow Glen Way to the San Jose Water Company (SJWC) property (700 feet upstream), the east bank will be widened to 70 feet creating a floodplain bench 5 to 12 feet above the channel bottom. The west bank and the lower east bank will be undisturbed. An 18-foot maintenance road and 22-foot wide floodway



will be located on the floodplain bench and the remainder replanted with riparian vegetation. A 500 linear foot section just opposite Pine Avenue will include a bypass to avoid impacts to existing riparian vegetation. The east bank of the bypass will be stepped gabions on a 1H:1V slope conforming to the slopes of upstream and downstream floodplain benches. The depressed maintenance road will continue along the east toe of the slope. A floodplain bench will continue upstream of the bypass and end as the depressed maintenance road ramps up to Almaden Road. The upper and lower east banks will be protected with stepped gabions on a 1H:1V slope. The existing east bank sacked concrete slope protection in the vicinity will be replaced with cribwalls at a 1H:6V side slope. Along Almaden Road, the channel will be widened to the east and the bank protected with cribwalls. Almaden Road and its future widening limit the channel widening. A maintenance road will be located on the depressed bench. A maintenance ramp from Almaden Road will provide access to the bench. The Malone Road Bridge was constructed by the City in 1989 and requires no further structural improvements. Upstream of Malone Road, the existing concrete lined slope on the east bank will be replaced with cribwalls and a floodplain bench will be excavated which will continue under the bridge. As the river meanders away from Almaden Road, another 500 linear foot section east of the channel will include a bypass designed to avoid impacts to existing SJWC groundwater wells and preserve existing riparian vegetation. The east bank of the bypass will be protected with cribwalls. For the remainder of the reach, the channel will be widened to the east creating a floodplain bench varying in width from 18 feet to 40 feet and 5 to 6 feet above the channel bottom. The lower east bank will remain as is and the upper bank will be protected with cribwalls. An 18-foot maintenance road will be located on the bench. All maintenance roads and ramps will be surfaced with 6 inches of aggregate. A portion of the bench will be revegetated with riparian vegetation. Throughout Reach 9, the natural stream will remain undisturbed except at biotechnical bank improvement sites. Erosion is active on the west bank near Pine Avenue and on a 250-foot length of bank upstream of Malone Road. These sites will be repaired with biotechnical bank repair methods.

**Modifications:** East bank floodplain benches will be located between the active channel and the bypass channel at Pine Avenue and Malone Road. Elevation of these benches will likely be slightly higher than other benches in Reach 9 to avoid and preserve existing riparian vegetation. At these locations, the west bank of the bypass will be sloped so that it can be revegetated. To help reduce further channel incision, and to improve existing pool dominated channel conditions, grade control structures may be constructed at locations to be identified.

**Reach 10A:** Curtner Avenue to the confluence with Canoas Creek. Project elements include replacement of Curtner Avenue Bridge. The existing maintenance road will continue under the new bridge and have a turn around near Almaden Expressway. The east bank will be widened to 70 feet creating a floodplain bench 5 to 12 feet above the channel bottom. The bench will be protected with cribwall at 1H:1V side slope. The west bank and the lower east bank will be undisturbed. An 18-foot maintenance road and 22-foot wide floodway will be located on the bench. All maintenance roads and ramps will be surfaced with 6 inches of aggregate. The remainder of the bench will be revegetated.

**Reach 10B:** Confluence with Canoas Creek to Koch Lane. Project elements include constructing a levee on the west bank between the river and southbound Almaden Expressway. The levee will be up to 4 feet high with a top width of 12 feet and 2H:1V side slopes. The alignment will meander to avoid existing trees, where feasible. A 4-foot floodwall will be constructed at the Lincoln Avenue overpass and conform to the levee. At the channel invert, a 5-foot wide riparian vegetation corridor will be planted and the low-flow channel will be constructed. Upstream of northbound Almaden Expressway a maintenance road will be established on the existing east bench. All maintenance roads and ramps will be surfaced with 6 inches of aggregate. Portions of the bench will be excavated to provide a larger revegetation area. Existing rock lining at the channel bottom will be relocated and reformed to create a low-flow channel. A ramp just upstream of northbound Almaden Expressway will provide access to the maintenance road. The existing weir at Stream Gage Station No. 23B will be re-located to improve survival of mitigation plantings in the reach.

**Reach 10C:** Koch Lane to Capitol Expressway. Project elements from the existing weir at Stream Gage Station No. 23B to the demolished Hillsdale Avenue Bridge will include excavating the east bank and creating a bench varying from 20 to 58 feet wide, at an elevation approximately 8 feet above the channel bottom. The west bank and lower east bank will remain undisturbed. If biotechnical bank repairs are determined to be infeasible in this reach, the upper east bank will be lined with stepped gabions at a 1H:1V side slope. An 18-foot maintenance road will be located on the bench at the toe of the upper slope. All maintenance roads and ramps will be surfaced with 6 inches of aggregate. The remainder of the bench will be revegetated. From the demolished Hillsdale Avenue Bridge to Capitol Expressway, a depressed 18-foot maintenance road on the east bank will continue. The east bank will be widened to provide 100-year flow capacity under Capitol Expressway. The west bank will remain undisturbed and barren areas revegetated. The bank above the maintenance road will be lined with cribwalls at 1H:6V slope up to the top of bank. If biotechnical bank repairs are determined to be infeasible in this reach, the bank below the maintenance road will be lined with stepped gabions. The existing concrete drop structure and rubble downstream of Hillsdale Avenue which acts as a fish barrier will be removed and the channel bottom excavated to upstream of Capitol Expressway to create a continuously sloping bottom for fish passage. A low-flow channel will be constructed. Currently, to maintain a stable grade and fish passage, there are a series of temporary vortex rock weirs immediately downstream of the existing concrete drop structure. During project construction, these vortex rock weirs will be removed.

**Reach 11A:** Capitol Expressway to Bryan Avenue. Project elements include constructing a maintenance road under Capitol Expressway Bridge from Reach 10C and ramping up to the top of bank upstream of the bridge. All maintenance roads and ramps will be surfaced with 6 inches of aggregate. The east bridge abutment will be excavated to provide additional flow capacity and to accommodate the maintenance road. Under the bridge, the east bank will consist of a vertical concrete retaining wall above the maintenance road. If biotechnical bank repairs are determined to be infeasible in this reach, the east and west banks will be protected with stepped gabions. Upstream of Capitol Expressway to where Chard Drive meets Almaden Expressway, only the west bank will remain undisturbed. The existing trees will be preserved and barren areas

revegetated. Just upstream of Capitol Expressway, the reach will include a 700 linear foot bypass, east of the channel, to avoid impacts to existing riparian vegetation. An 18-foot wide depressed maintenance road will continue on the east bank. The bank below the road will be earth at 2H:1V slope and, if biotechnical bank repairs are determined to be infeasible in this reach, the upper bank will be lined with stepped gabions on a 1H:1V slope up to the 100 year flood water surface elevation. Above the 100 year flood flow elevation, the upper east bank will be earth on a slope of 2H:1V for revegetation. The distance from the top of the east bank to the right-of-way will be 30 feet. Planting areas will be provided in the stepped gabions if they are considered necessary. The 18-foot maintenance road on the top of bank upstream of Capitol Expressway will end at Steval Place. The depressed maintenance road on the east bank upstream of the bypass channel will continue upstream to the SJWC property. Maintenance access will also be provided on the top of east bank and will be designed to avoid existing trees. Gates will limit access to these areas. Bare areas will be revegetated with riparian vegetation. Existing concrete rubble, acting as fish barrier, in the channel bottom will be removed for fish passage.

**Modifications:** Starting just upstream of the bypass, the channel may be widened on either the east or west bank, to provide 100 year flood capacity. Both alternatives still need to be investigated to determine which is superior for both flood control and environmental improvement opportunities. Throughout Reach 11A, the natural stream will remain undisturbed except where biotechnical bank improvement sites are identified. To help reduce further channel incision, and to improve existing pool dominated channel conditions, grade control structures may be constructed at locations to be identified.

**Reach 11B:** Bryan Avenue to the confluence with Ross Creek. Project elements include channel widening to the west to create a depressed bench up to 40 feet wide. The depressed bench and a 20-foot wide corridor on the west bank will be revegetated. An 18-foot maintenance road and ramps will be provided to service the revegetation area and for access to the channel bottom. All maintenance roads and ramps will be surfaced with 6 inches of aggregate. An abandoned SJWC concrete low-flow crossing that acts as a fish barrier will be removed. An existing SJWC well and associated piping on the west side of the river will be relocated. A maintenance road will also be provided on the east top of bank. The maintenance road will be designed to avoid the existing vegetation, including stands of sycamore trees.

**Reach 11C:** Confluence with Ross Creek to Branham Lane. Project elements include widening the west bank and lining with cribwalls at a 1H:6V side slope. A depressed bench will be created for a floodway and revegetation, and will be designed to minimize impacts to existing trees. A ramp down to the depressed bench will be provided. The widening will require the removal of a parking area for one commercial building. The parking area will be relocated to the south of the building. The east bank will be undisturbed. The continuous maintenance road from downstream will be located on the east bank. A ramp will be provided for the underpass at Branham Lane. All maintenance roads and ramps will be surfaced with 6 inches of aggregate.

**Reach 12:** Branham Lane to Blossom Hill Road. From Branham Lane to the existing percolation ponds, the channel is adequate to contain the 100-year flood with only minor modifications. For mitigation to the impacts downstream, approximately 9 acres of land on the west bank will be acquired for revegetation. In order to create riparian, wetland, and open water habitat, the adjacent land will be excavated 10 to 15 feet deep. The additional 5.6 acres of riparian mitigation pond created will function as a recharge pond. Maintenance roads will be located on the top of both the east and west banks. A ramp will provide access under the Branham Lane Bridge. The City plans to construct future Chynoweth Avenue which will impact approximately 1.4 acres of the existing percolation pond. The City could place fill over the existing percolation ponds to accommodate a longer approach to the new bridge and minimize the bridge span length across the river. The mitigation for lost recharge due to the City's impacts will be included in the District's riparian mitigation pond in this reach. The City will enter an agreement with the District to purchase land and perform work for which the City will later reimburse the District. From the downstream end of the percolation ponds to Blossom Hill Road, the channel will be widened primarily to the west, and existing levees on both banks will be reconstructed. An 18-foot wide floodway will be created with the proposed upper earth bank at a 2:1 slope on the west bank. Maintenance roads will be located on both tops of banks and on the bench.

**Canoas Creek:** Almaden Expressway to the end of Nightingale Drive. Project elements include constructing floodwalls on both banks. The floodwalls will be 3 to 4 feet high and located 2 feet inside District right of way. The 18-foot maintenance road will remain inside the floodwalls and ramps will be provided for access onto Almaden Expressway and Nightingale Drive. A 20 feet wide by 12feet high concrete box culvert will be added adjacent to the existing double 10 feet wide by 12-feet high RCB culverts at Almaden Expressway. This addition will be on the north side of the existing box culverts and the existing outlet transition will be improved to accommodate the new cell. Similarly, a 9 feet wide by 9.5-feet high concrete cell will be added to the existing double 9 feet wide by 9.5-feet high existing RCB culvert at Nightingale Drive. This addition will be on the south side of the existing box culverts and both the inlet and outlet transitions will be modified to accommodate the new cell.

**Ross Creek:** Almaden Expressway to upstream of Jarvis Avenue. Project elements include channel bottom widening to 30 feet with 1H:1V side slopes. Both banks will be lined with articulated concrete mattress. An 18-foot maintenance road will be established on the south top of bank. The maintenance road will be depressed 3 feet below grade for security to adjacent properties. Intermittent rock placement and groins will be installed to create a low-flow channel. A second 20 feet wide- by 10 feet high RCB culvert will be added on the north side of the existing culvert under Almaden Expressway to increase the capacity to convey the computed 100-year flood. The existing sewer line in Almaden Expressway will be relocated in coordination with the City. Similarly, at Jarvis Avenue, a second 12 feet wide by 9.5 feet high box culvert will be constructed. A fish step pool system will be constructed at the confluence of Ross Creek for fish migration into Ross Creek. Low flow channels and baffles will be included in the design of the new RCB culverts for fish passage.

**Fish Passage Improvements:** Project elements include removing existing fish barriers at 4 sites upstream of the project. Steelhead and Chinook runs would greatly benefit from the removal of these partial fish barriers sites upstream of the District's Alamos drop structure. Fish barriers to be removed would be at the following locations:

- Guadalupe Creek, Stream Gage Station 43
- Guadalupe Creek, Concrete U-Frame Channel
- Alamos Creek, Mazzone Drive Gabion Structure
- Alamos Creek, Stream Gage Station 16

12. **Maintenance Program:** The Project has a maintenance program, described in the Engineer's Report, which includes erosion protection, slope stabilization, vegetation removal, and sediment removal. The goals of the maintenance program include restoring constructed facilities to the design condition following construction, repairing constructed facilities as necessary, and eliminating hazardous conditions. The hazardous conditions include eroding banks, presence of large dead or fallen trees, and excessive trash and debris. Non-emergency work within the channel will be performed outside of the nesting season. Vegetation removal will be scheduled to minimize adverse impacts to fish and wildlife resources. Periods of concern are March through June for birds and October through June for fish.

All maintenance activities associated with the Project will also be in compliance with construction methods, best management practices, mitigation, and reporting requirements described in Board Order No. R2-2002-0028, for the Santa Clara Valley Water District Multi-Year Stream Maintenance Program.

13. The Project will result in the excavation of approximately 680,000 cubic yards (cyd) of material and the discharge of approximately 62,000 cyd of fill within the upper Guadalupe River.

### **Environmental Documentation**

14. **CEQA:** The California Environmental Quality Act (CEQA) requires all public agencies to comply with CEQA when approving discretionary projects. To comply with CEQA, the Discharger's Board of Directors prepared, circulated for public comment and certified the Draft Upper Guadalupe River Flood Control Project Environmental Impact Report/Environmental Impact Statement (FEIR/EIS) at a public meeting on August 15, 2001. As a responsible agency, the Board has considered the FEIR/EIS and finds that significant impacts identified in the FEIR/EIS have been mitigated to less than significant levels and that modifications to the LPP will not result in new significant impacts or a substantial increase in the severity of previously identified impacts in the FEIR/EIS.

**Beneficial Uses, Project Impacts and Mitigation**

15. **Beneficial Uses:** The Board is charged with protecting beneficial uses from pollution and nuisance that may occur as a result of waste discharges in the San Francisco Bay Region. The potential and existing beneficial uses for the Guadalupe River, Canoas Creek, Ross Creek, South San Francisco Bay, and the Santa Clara Valley Groundwater Basin as designated in the Water Quality Control Plan for the San Francisco Bay Basin, 1995, and by the Clean Water Act, Section 401 Beneficial Use Assessment for the Upper Guadalupe River Flood Control Project, dated February 23, 2001, submitted by the Discharger include:

Guadalupe River, Canoas Creek, and Ross Creek

- a. Cold Freshwater Habitat (COLD)
- b. Freshwater Replenishment (FRSH)
- c. Groundwater Recharge (GWR)
- d. Industrial Service Supply (IND)
- e. Fish Migration (MIGR)
- f. Municipal Service Supply (MUN)
- g. Preservation of Rare and Endangered Species (RARE)
- h. Water Contact Recreation (REC-1)
- i. Noncontact Water Recreation (REC-2)
- j. Fish Spawning (SPWN)
- k. Warm Freshwater Habitat (WARM)
- l. Wildlife Habitat (WILD)

South San Francisco Bay

- a. Ocean, Commercial, and Sport Fishing (COMM)
- b. Estuarine Habitat (EST)
- c. Preservation of Rare and Endangered Species (RARE)
- d. Water Contact Recreation (REC-1)
- e. Shellfish Harvesting (SHELL)
- f. Fish Spawning (SPWN)
- g. Wildlife Habitat (WILD)

Santa Clara Valley Groundwater Basin

- a. Municipal and Domestic Water Supply (MUN)
- b. Industrial Process Water Supply (PROC)
- c. Industrial Service Water Supply (IND)
- d. Agricultural Water Supply (AGR)

16. **Mitigation and Monitoring Plan:** The Upper Guadalupe River Flood Control Project Mitigation and Monitoring Plan, dated November 1999 (MMP) was developed as part of the FEIR/EIS, and describes Project impacts, measurable objectives for mitigation and monitoring, and a process for adaptive management for the Project (Appendix F). Implementation of mitigation and monitoring requirements of the MMP, as described in the MMP Summary Table (Appendix F(a)) is intended to protect water quality and beneficial uses of the Guadalupe River. The Regional Board approves the MMP,

including the MMP Summary Table, and by this Order requires implementation of the MMP and achievement of the measurable objectives.

17. **Impact Avoidance and Minimization:** To avoid and minimize impacts to beneficial uses, and water quality, the Discharger will develop and implement the following plans and programs, and all measures included in the MMP:
- a. Vegetation Protection Plan;
  - b. Stormwater Pollution Prevention Plan (SWPPP);
  - c. Erosion and Sediment Control Plan;
  - d. Spill Prevention and Response Plan;
  - e. Soil Management Plan;
  - f. Self-Monitoring Water Quality Sampling Plan;
  - g. Hazardous and Toxic Materials Contingency Plan;
  - h. Construction-Area Fish Management Program;
  - i. Construction period limits;
  - j. Measures to comply with the Migratory Bird Treaty Act;
  - k. Bay Area Air Quality Management District feasible control measures for emissions;
  - l. Traffic Management Plan;
  - m. Cultural Resources Management Plan;
  - n. Coordination with service providers before construction; and
  - o. Noise reducing construction practices.

Temporal impacts will be minimized by early creation of wetland and riparian habitat. Wetland mitigation will be constructed during the first year of Project construction, occurring concurrent with or before wetland impacts.

18. **Beneficial Use Impacts and Mitigation:**

Guadalupe River, Canoas Creek, and Ross Creek

- a. Cold Freshwater Habitat: temporary impacts from construction will result in increased temperature from construction related removal of shade producing riparian vegetation. Temporary impacts to temperature will be mitigated by removal of four fish barriers providing access to an additional 12.2 miles of suitable habitat in Alamitos and Guadalupe Creeks. Post-project conditions in the Project reach will increase shade and improve water temperatures once riparian vegetation matures.
- b. Freshwater Replenishment: no impact anticipated.
- c. Groundwater Recharge: no impact anticipated.
- d. Industrial Service Supply: no impact anticipated.
- e. Fish Migration: temporary impacts from construction may occur but will be avoided by limiting construction in the River from June 1 to October 15 to avoid migration periods of Chinook and steelhead. Fish relocation BMPs will be implemented to prevent stranding and 12.2 miles of additional migration opportunities in Alamitos and Guadalupe Creeks will be provided by removing four fish barriers.
- f. Municipal Service Supply: no impact anticipated.
- g. Preservation of Rare and Endangered Species: no impact anticipated.

- h. Water Contact Recreation: temporary interruption to access will occur in Project reaches during construction. Changes to downstream flows are not anticipated to occur and will not affect navigation.
- i. Non-contact Water Recreation: temporary interruption to upper Guadalupe River aesthetics will occur in Project reaches during construction.
- j. Fish Spawning: no impact anticipated.
- k. Warm Freshwater Habitat: no impact anticipated.
- l. Wildlife Habitat: temporary and permanent impacts to riparian and wetland habitats and associated wildlife will occur during construction. Early implementation of riparian mitigation is intended to help offset these impacts. Riparian infill and instream habitat improvements will provide long-term benefits to wildlife.

South San Francisco Bay

No impacts anticipated.

Santa Clara Valley Groundwater Basin

No impacts anticipated.

- 19. **Permanent Project Impacts:** As shown in Table 1 of this Order, Project activities will result in the permanent loss of 1.47 acres of nontidal freshwater wetlands, 10.45 acres of riparian forest, 4,886 linear feet of SRA, and 1,720 linear feet of undercut banks.
- 20. **Temporary Project Impacts:** An unquantified amount of temporary impacts to wetlands and open waters will occur during project construction. These temporary impacts are considered insignificant as an equal amount of wetlands and an equal or greater amount of open water habitat are expected to occur shortly after construction activities end.
- 21. **Permanent Project Impact Mitigation:** To compensate for unavoidable, permanent Project impacts, the Discharger has committed to the following mitigation as described in the Mitigation and Monitoring Plan (MMP), Volume 8 of the FEIR/EIS, dated November 1999, and Table 1 of this Order:
  - Creation of 1.47 acres of wetlands at an off-stream site in Reach 12, adjacent to the west side of the Guadalupe River. Mitigation will be part of an approximately 2.2 acres wetland creation side combined with an approximately 4.85 acres percolation pond. Additional wetland acreage may be used for impacts resulting from other projects and for any additional impacts resulting from design modifications.
  - Creation of 20.89 acres of riparian forest and approximately 5.87 acres of additional riparian forest that may be used for impacts resulting from other projects and for any additional impacts resulting from design modifications. Riparian mitigation sites will occur throughout Reaches 6 through 12.
  - Creation of 4,886 linear feet of SRA throughout Reaches 6 through 12 using biotechnical bank stabilization techniques and development of maturing riparian vegetation.
  - Creation of 1,720 linear feet of undercut banks throughout Reaches 6 through 12 using biotechnical bank stabilization techniques and development of maturing riparian vegetation roots.



The construction of Project modifications will not cause significant impacts to water quality and beneficial uses of the Guadalupe River. Unavoidable impacts resulting from construction activities related to the modifications will be less than significant and will be mitigated by the ecological benefits intended by the modifications. As part of the design modification review process, the GWIWG will review potential impacts for each reach subject to modifications to ensure that they are less than significant and mitigated by benefits of the modifications. Results of this review will be submitted to the Executive Officer for approval, with submission of the 65% design plans.

**Table 1. Project Impacts and Mitigation**

<b>Habitat Type</b>	<b>Permanent Impacts</b>	<b>Mitigation</b>
Nontidal Freshwater Wetlands	1.47 acres	1.47 acres
Riparian	10.45 acres	20.89 acres
Shaded Riverine Aquatic (SRA)	4,886 linear feet	4,886 linear feet
Undercut Bank	1,720 linear feet	1,720 linear feet

22. **Adaptive Management:** The MMP provides for an Adaptive Management Team (AMT). This Team, will provide ongoing oversight of the MMP implementation as described in Finding No. 6 of this Order. The purpose of the AMT is to assure that mitigation measures successfully reestablish ecological functions and habitat values.

**Regulatory Framework**

23. The Board, on June 21, 1995, adopted, in accordance with Section 13244 et. seq. of the California Water Code, a revised Water Quality Control Plan, San Francisco Bay Basin (Basin Plan). The State Water Resources Control Board and the Office of Administrative Law approved this updated and consolidated revised Basin Plan on July 20, 1995, and November 13, 1995, respectively. A summary of the revisions to the regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. This Order is in compliance with the Basin Plan.
24. In accordance with Section 13050(d) of the California Water Code, “ ‘Waste’ includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin...” The Board has determined that the discharge of sediment related to construction activities and the discharge of sediment associated with incidental fall back related to dredging activities into “Waters of the State” as defined in Section 13050(e) of the California Water Code, are defined as waste and require the Discharger to file a report of waste discharge with the Board in accordance with Section 13260(a)(1) of the California Water Code. The Discharger filed a report of waste discharge on April 8, 2002.

25. A discharge of water (effluent) could result from the handling and placement of excavated material at an off-site temporary stockpile site (if used). Any effluent discharged during material placement and temporary storage is referred to as “decant water.” This Order regulates effluent discharged as a result of excavated material placement and temporary storage as described in Provision D.12 of this Order
26. The Basin Plan Wetland Fill Policy establishes that there is to be no net loss of wetland acreage and no net loss of wetland value when a project and any proposed mitigation are evaluated together, and that mitigation for wetland fill projects is to be located in the same area of the Region, wherever possible, as the project. The Project complies with the Policy. The Policy further establishes that wetland disturbances should be avoided whenever possible, and if not possible, should be minimized, and only after avoidance and minimization of impacts should mitigation for lost wetlands be considered. The Discharger has submitted documentation to show that appropriate effort was made to avoid and then to minimize the Project’s wetland disturbance, as required by the Basin Plan. The Board concurs with this finding.
27. Pursuant to California Water Code Section 13263 and Title 23, California Code of Regulations Section 3857 and 3859, the Board is issuing WDRs and Water Quality Certification for the Project.
28. The Board has notified the Discharger and interested parties of its intent to issue WDRs and Water Quality Certification for the Project.
29. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.
30. Certification is conditioned upon total payment of any fee required under 23 CCR and owed by the Discharger.

IT IS HEREBY ORDERED that, with the implementation of the following conditions and requirements, the Board certifies that the Project described herein will comply with the applicable provisions of sections 301, 302, 303, 306 and 307 of the Clean Water Act. It is further ordered that, pursuant to California Water Code sections 13263 and 13267, the Discharger shall comply with the following:

**A. Discharge Prohibitions**

1. Project activities that result in the direct discharge of waste, as described in Section 13050(d), of the California Water Code, from construction sites to surface waters or surface water drainage courses are prohibited.
2. Project activities subject to these requirements shall not cause a nuisance as defined in Section 13050(m) of the California Water Code.

3. Excavated material that is not desirable and/or suitable for beneficial reuse shall remain within designated disposal areas at all times. The designated disposal areas are: (a) an off-site temporary or permanent location in accordance with federal and state regulations, (b) any on-site temporary location provided material will be isolated and contained to prevent impacts to jurisdictional waters and beneficial uses, or (c) a permitted landfill.
4. The discharge of decant water from any temporary excavated material stockpile or storage areas to surface waters or surface water drainage courses outside of the active excavation site is prohibited except where BMPs are adopted to comply with effluent and receiving water limitations.
5. Groundwater beneficial uses shall not be degraded as a result of the Project.

**B. Effluent Limitations**

Wastewater (decant water and/or runoff water), and diverted water that drains to waters of the State shall not exceed the following limits of quality at any time:

pH: 0.5 pH units above or below ambient levels

Settleable matter: 1.0 ml/l/hr

Dissolved sulfide: 0.1 mg/l

Temperature: 5° F above ambient levels

**C. Receiving Water Limitations and Water Quality Monitoring Protocols**

1. The Project's activities shall not cause:
  - a. The temperature of any waters providing cold or warm freshwater habitat to be increased by more than 5° F above natural temperatures unless a qualified biologist can demonstrate that such alteration in temperature does not adversely affect beneficial uses.
  - b. Floating, suspended or deposited macroscopic particulate matter or foam in waters of the State at any place more than 100 feet from the point of discharge of diverted flow or decant water.
  - c. Alteration of apparent color beyond present natural background levels in waters of the State at any place more than 100 feet from the point of discharge of diverted flow or decant water.
  - d. Visible floating, suspended, or deposited oil or other products of petroleum origin in waters of the State at any place more than 100 feet from the point of discharge of diverted flow or decant water.

- e. The diverted flow or decant water shall not cause waters of the State to exceed the following water quality limits at 100 feet downstream from the point of discharge of diverted flow or decant water:
  - i. Dissolved Oxygen: 7.0 mg/l minimum. When natural factors cause lesser ambient concentrations, then the discharge shall not cause further reduction in the concentration of dissolved oxygen.
  - ii. pH: A variation of natural ambient pH by more than 0.5 pH units.
  - iii. Toxic or other deleterious substances: None shall be present in concentrations or quantities which may cause deleterious effects on aquatic biota, wildlife or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.
- 2. Turbidity of the waters of the State, as measured in NTUs, 100 feet downstream from the point of discharge of diverted flow and decant water, shall not increase above background levels by more than the following at any time:

<u>Receiving Waters Background</u>	<u>Incremental Increase</u>
< 50 units	5 NTUs
≥ 50 units	10% of background, maximum

- 3. Receiving water limitations described above, and background water quality conditions shall be monitored in the morning and afternoon, each day, during hours of operation. The Discharger, including all contractors responsible for work on the Project, shall follow the same receiving water, water quality sampling protocols and report monitoring results to the Regional Board every two weeks or immediately upon request by a Regional Board representative.
- 4. Water quality sampling protocols shall be consistent with the Santa Clara Valley Water District Self-Monitoring Water Quality Sampling Plan (Final) for the SMP, dated December 2001, with the following revisions:
  - a. If any receiving water limit for a constituent or constituents is exceeded for a 4-hour period, than the Regional Board shall be notified by telephone and email of the exceedance and a corrective action plan to restore compliance with receiving water limitations.
  - b. If any receiving water limit for a constituent or constituents is exceeded for an 8-hour period, than construction activities upstream of the discharge will be terminated and will not resume until compliance with receiving water limitations is restored.

**D. Provisions**

**Standard Provisions**

1. The Discharger will comply with this Order, in its entirety, immediately upon adoption of this Order except where Provisions of this Order specify alternative compliance dates.
2. All plans and reports pursuant to these Provisions shall be prepared under the supervision of a suitable professional registered in the State of California.
3. Construction in the Guadalupe River, below ordinary high water (2.33 year flood recurrence interval) will be limited to the summer dry season between June 1 and October 15 of each year, to prevent impacts to steelhead trout and Chinook salmon, unless notification to, and approval by the Executive Officer are received in advance.
4. The Discharger is responsible for correcting any and all problems which arise in the event of Project failure, including a failure to meet the conditions of this Order, that result in an unauthorized release of waste or wastewater.
5. Certification is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a FERC license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
6. This Order does not authorize commission of any act causing injury to the property of another or of the public; does not convey any property rights; does not remove liability under federal, state or local laws, regulations or rules of other programs and agencies nor does this Order authorize the discharge of wastes without appropriate permits from other agencies or organizations.
7. The Discharger shall comply with all necessary approvals and/or permits for the Project from applicable government agencies, and shall submit copies of such approvals and/or permits to the Executive Officer prior to Project implementation.
8. The Discharger shall ensure that all individuals working on Project work sites, including any and all contractors and sub-contractors, are familiar with the contents and requirements of this Order, and all relevant plans and BMPs, and shall keep copies of these documents at Project work sites so as to be readily available at all times to operating personnel and workers.
9. Every certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code and 23 CCR Section 3867.

10. The Discharger shall permit the Board or its authorized representative, upon presentation of credentials:
  - a. Entry on to the premises on which Project activities are planned or underway, wastes are located, or in which records are kept.
  - b. Access to copy any records required to be kept under the terms and conditions of this Order.
  - c. Access to inspect any treatment equipment, monitoring equipment or monitoring method required by this Order.
  - d. Access to sample any discharge or surface water covered by this Order.

### **Construction Provisions**

11. Prior to Project construction, the Discharger shall submit a detailed design and construction schedule to the Executive Officer for approval. The construction schedule shall include:
  - Chronological order of final design and construction for each reach,
  - Years construction will start and stop for each reach,
  - Explanation for the design and construction schedule described.
12. Prior to implementation of each of the designated Project reaches, the Discharger shall submit 65% design plans to the GWIWG for review. Recommendations from the GWIWG will be submitted to the Executive Officer for approval no less than 60 days prior to construction.
13. The Discharger shall conduct all construction activities in accordance with plans listed in Finding No.17 of this Order. Prior to construction, all BMPs shall be updated to reflect those developed for the Stream Maintenance Program (Order R2-2002-0028) except for those that are determined to be specific to Stream Maintenance Program activities only and not appropriate for capital projects.
14. The Discharger may temporarily stockpile excavated material prior to disposal or reuse provided that appropriate BMPs are implemented to protect water quality and beneficial uses. The excavated material may be stockpiled on-site for Project reuse or for loading into trucks for off-site disposal. The Discharger shall contain temporary on-site stockpiled material so that runoff, sediment, or decant water from the excavated material will not contact waters of the State outside the active excavation site without first being treated to meet receiving water limitations described in this Order.
15. Prior to excavation of sediment, the Discharger shall characterize material to be removed using protocols described in the Santa Clara Valley Water District Sediment Characterization Plan dated December 2001.

16. The Discharger shall ultimately dispose of dewatered excavated material at a permitted landfill, upland disposal site, or at a reuse site in accordance with applicable state and federal regulations including applicable provisions of this Order and the Downtown Guadalupe Flood Control Project Mitigation and Monitoring Plan mercury level requirements, pages 2-23 and 2-24.
17. A delineation of existing jurisdictional waters of the State and United States at any temporary excavated material disposal or stockpiling site verified according to U.S. Army Corps of Engineers delineation standards shall be conducted by a qualified biologist prior to the construction of an impoundment at the site. Jurisdictional waters shall be avoided when selecting temporary disposal or stockpiling sites.
18. The Discharger shall implement BMPs to prevent pollutants from draining into waters of the State, including the discharge of pollutants from temporary stockpiles of excavated material, during transport of excavated material, from application of herbicides and pesticides, and from vegetation and construction related materials.
19. The Discharger shall remove and properly dispose of any wastes that are discharged at any Project work sites in violation of this Order.
20. The discharge of any hazardous, designated or non-hazardous waste as defined in Title 27, Division 2, Subdivision 1, Chapter 2 of the California Code of Regulations shall be conducted in accordance with applicable state and federal laws and regulations.
21. The Discharger shall file with the Board a report of any material change or proposed change in the character, location, or quantity of this waste discharge. For the purpose of these requirements, this includes any proposed change in the boundaries of the designed disposal areas.
22. To prevent surface erosion and sedimentation, disturbed soil related to Project activities shall be winterized consistent with protocols described in the Regional Water Quality Control Board Erosion and Sediment Control Field Manual dated August 2002. Exposed surfaces should be stabilized with appropriate erosion control materials and/or revegetated with appropriate native vegetation or non-native sterile seed mix no later than October 15<sup>th</sup>. Any proposal to winterize Project sites later than October 15<sup>th</sup> shall be submitted to the Executive Office no later than October 1<sup>st</sup>.
23. The Discharger shall divert any flow at the site around the active Project work area in a non-erosive manner using a pipe or other BMP measure such that flows do not cross active work sites.
24. If dead or dying fish or fish exhibiting stress are observed within 1,000 feet of Project work activity or discharge, the Discharger shall immediately assign a qualified biologist to investigate the cause of the problem and define an acceptable corrective action plan. If the cause is related to Project activities, the Discharger shall halt work activities until an acceptable corrective action plan can be implemented. The Discharger shall immediately report all incidences involving dead or dying fish or fish exhibiting stress, as well as prescribed action plans to the California Department of Fish and Game,

National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Executive Officer.

**Mitigation, Monitoring and Reporting Provisions**

25. **Project Impact Limits:** Project impacts shall not exceed amounts listed in Table 1 of this Order. Any potential impacts greater than those listed in Table 1 shall be submitted to the Executive Officer in advance to determine whether impacts can be avoided, and whether additional unavoidable impacts will require environmental review under CEQA, compensatory mitigation, or amendments to this Order.
26. **Mitigation and Monitoring Plan Implementation:** The Dischargers shall implement the Mitigation and Monitoring Plan referred to in Finding No. 16 above.
27. **Achievement of Measurable Objectives:** One year following the achievement dates of the Measurable Objectives of the Mitigation and Monitoring Plan referred to in Finding 16 above, the Discharger shall submit a technical report, acceptable to the Executive Officer, documenting achievement of the measurable objectives or documenting that acceptable progress has been made towards achievement of the Measurable Objectives. The achievement dates are set forth in the descriptions of the Measurable Objectives contained in the Dischargers' Mitigation and Monitoring Plan, dated November 1999. The additional year provided by this Order to document compliance is intended to provide sufficient time for the Adaptive Management process, as implemented by the Adaptive Management Team pursuant to Finding No. 22 of this Order, to assess attainment of the Measurable Objectives and appropriateness of Measurable Objectives indicators, propose changes to the Measurable Objectives, or develop remedial actions.
28. **Monitoring Program:** By March 31 of each year, the Discharger shall submit a technical report acceptable to the Executive Officer, containing the results of the monitoring program for the previous year.
29. **Mitigation Success Status Report:** By August 31 of each year, the Discharger shall submit a technical report acceptable to the Executive Officer, containing the assessment of monitoring results for the previous year, and Adaptive Management Team (AMT) recommendations for monitoring program modification or corrective measure implementation, if appropriate. It is anticipated, as described in the Dischargers' Mitigation and Monitoring Plan, that the assessments and corrective measure proposal will be the product of the AMT.
30. **Revised Mitigation:** If compensatory mitigation has not developed in accordance with the measurable objectives and other requirements of the MMP, the Discharger shall prepare a revised mitigation plan following review by the Adaptive Management Team and acceptable to the Executive Officer, addressing corrective action, outlining additional monitoring, or proposing new mitigation that will comply with the MMP mitigation objectives. The revised mitigation plan will be submitted for Executive Officer approval no later than 90 days following the final 10-year monitoring report.



31. The Board may reconsider the terms of this Order based on the results of monitoring plans or evidence of adverse water quality impacts related to the projects.

### **Design Improvement Studies**

32. The following design improvement studies shall be conducted and reported as part of the Project design modification process:
  - a. **Sediment Supply and Transport Study:** To better understand sediment supply and transport dynamics as they relate to channel geometry and stability, the Discharger shall develop and conduct a sediment supply and transport study in the upper Guadalupe River, based on recommendations of the independent review panel described in Finding No. 10 of this Order. Phase one of the study should focus on using existing sediment data and any appropriate short-term field data to estimate base line conditions of sediment size class distribution, imbeddedness, transport rates, and volume, and to evaluate whether design modifications will have negative, positive, or undeterminable affects on base-line conditions in the Guadalupe River. Phase two of the study should collect long-term sediment data to determine whether the Project has had significant affects on base-line conditions in the Guadalupe River that need to be addressed through adaptive management. Results of Phase one of this study and a design plan for phase two shall be submitted to the Executive Officer by January 2005.
  - b. **Longitudinal Profile and Cross-Sections Channel Survey Study:** To better understand degree and rates of erosion, incision and aggradation in the Project reaches, the Discharger shall conduct a longitudinal profile and channel cross-sections study based on recommendations of the independent review panel described in Finding No. 10 of this Order. At a minimum, this study should include a survey of the thalweg channel longitudinal profile and periodic monumented cross-sections from I-280 to Blossom Hill Road. A base-line condition profile and cross-sections shall be surveyed between spring and fall prior to commencement of construction. The profile and cross-sections shall be resurveyed following commencement of construction at an appropriate frequency to be determined and proposed by the Discharger and approved by the Executive Officer. Profiles and cross-sections shall be compared to illustrate localized and reach-scale trends in channel change. This data shall be used to identify appropriate location and design of grade control structures and to help identify any Project impacts on instream incision and aggradation. The Discharger shall submit a long-term longitudinal profile and cross-section survey plan to the Executive Officer by June 2004.
  - c. **Riparian Planting Soil Suitability Study:** Success of riparian vegetation planted throughout the Project is largely dependant on the suitability of the soils in which they are established. A dense clay layer (fat clay) has been identified in several areas along the Guadalupe River and in the Project reaches. For reaches identified for channel improvement modifications and riparian mitigation, the Discharger shall develop and implement a soil suitability study, based on recommendations of the independent review panel described in Finding No. 10 of this Order, to sample and characterize existing soil conditions. This data will be used to determine how

existing soils conditions will influence establishment and success of riparian vegetation and whether soil enhancement measures, like over-excavation and backfilling, are feasible to improve long-term riparian sustainability. Study results will be completed as part of the modification design process and submitted to the Executive Officer for approval with 65% design plans for each reach.

- d. **Modification Design and Location Study:** Prior to design of improvement modifications to the active channel, the Discharger shall develop and implement a study to determine the designs and locations of modifications described in Finding No. 9 of this Order and based on recommendations of the independent review panel described in Finding No. 10 of this Order. The purpose of this study is to use a science based approach to determine where modifications like floodplain benches, biotechnical bank treatments, and grade control structures are best placed in Reaches 6, 7, 8, 9, and 11A, and to determine the most appropriate designs of these features. The Discharger shall base their location and design determinations on criteria developed by the GWIWG. Study results will be completed as part of the modification design process and submitted to the Executive Officer for approval with 65% design plans for each reach.
  - e. **Gravel Augmentation Program Study:** The Discharger shall develop a study to create protocols for augmenting upper Guadalupe River gravel supplies based on recommendations of the independent review panel described in Finding No. 10 of this Order. The study will identify reaches that are scouring due to lack of sediment supply, define the reasons for gravel reduction in the system, and develop protocols for improving existing conditions. A Gravel Augmentation Plan will be produced to address gravel shortages, improve aquatic habitats, and improve channel stability in the Project reaches. A report describing gravel augmentation protocols in the Guadalupe River shall be submitted to the Executive Officer by January 2006.
  - f. **Temperature Impacts Study:** The Discharger shall develop and implement a water temperature study that analyses water temperature impacts within the Project reaches resulting from sources outside the Project area. This study shall estimate the degree to which temperature inputs from outside the Project reaches are affecting temperatures downstream. Results of this analysis shall be used to develop recommendations for the remediation of any impacts to water temperature that could affect water quality and beneficial uses in the Project reaches. The Discharger shall submit a report to the Executive Officer describing the methods of analysis used, results, and recommendations for remediation by January 2004.
  - g. **Bank Armoring Suitability Study:** For each reach, the Discharger shall review conceptual designs for bank protection and determine which methods could be constructed to maximize the use of natural materials and vegetation and minimize the use of hardscape. Results of this review shall be submitted to the Executive Officer for approval with 65% design plans for each reach.
33. The independent panel review described in Finding No. 10 of this Order shall result in a report submitted to the GWIWG for review and response. The GWIWG shall provide a written response including Project design and study recommendations, to the Executive

Officer for approval no later than 90 days following receipt of the independent panel review report and prior to construction with the exception of Reaches 10B, 12, and the four fish barrier removal sites.

34. The Regional Board will respond to submittals which require approval by this Order within 60 days of receipt of the submittal or they shall be automatically approved
35. Technical reports required by this Order are requested pursuant to Section 13267 of the California Water Code and shall be acceptable to the Executive Officer.

I, Bruce Wolfe, Executive Officer, do hereby certify that the foregoing is a full, complete and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on December 3, 2003.

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Bruce H. Wolfe  
Executive Officer

**Appendices:**

- A. Map of Project Location
- B. Map of Guadalupe River Flood Protection Projects
- C. GWIWG Participants
- D. Project Schedule
- E. Typical Cross-Sections
- F. Mitigation and Monitoring Plan