

2.0 PROPOSED PROJECT AND ALTERNATIVES

The feasibility study area includes a 5.5-mile segment of the Guadalupe River in the City of San Jose. The Guadalupe River flows through the Santa Clara Valley and drains into the San Francisco Bay to the north (see Figure 2-1). For flood control engineering descriptive purposes, the river has been divided into a number of "reaches," segments distinguished by major street and railroad crossings. The feasibility study area contains Reaches 7 through 12, extending from the Southern Pacific Railroad bridge just south of I-280, upstream 5.5 miles to the Blossom Hill Road bridge (see Figure 2-2). This is, hydrologically, the middle portion of the watershed. For the purposes of this study it is called the "Upper Guadalupe River." The feasibility study area also includes areas of Ross Creek extending 5,200 feet upstream from its confluence with the Guadalupe River, and Canoas Creek extending 2,800 feet upstream from its confluence with the Guadalupe River.

Urban development in the Santa Clara Valley in the past 50 years has been extensive. Prior to World War II, the Santa Clara Valley supported agriculture and agriculture-related industries. After the war, industry expanded rapidly, and the associated suburban sprawl and population growth eliminated nearly all fruit orchards and vegetable farms in the following 20 years. Since the early 1970s, substantial growth of computer industries has occurred in the area, as the recognition of the Santa Clara Valley as "Silicon Valley" attests (COE 1998). Population increases have been dramatic. Santa Clara County's population doubled between 1950 and 1960 and doubled again by 1980. Census figures for the 1990s indicate a population of about 1.5 million people in Santa Clara County, with over half living within San Jose city limits (COE 1998). Much of this urban development was placed in floodplains including that of the Guadalupe River. This development within the floodplains has resulted in increased potential for risks to public safety and property damage caused by flooding.

The Guadalupe River drainage basin (see Figure 2-3) covers approximately 170 square miles, of which the upper Guadalupe River drainage area comprises approximately 95 square miles. Elevations within the watershed range from 0 to 3,790 feet above sea level. The Guadalupe River meanders across the gentle gradient of the Santa Clara Valley. Along the feasibility study area, there is less than a 100-foot change in elevation. The drainage basin is bounded on the south and southwest by the Santa Cruz Mountains, on the west by the drainage basins for San Thomas and Saratoga creeks, on the east by the Coyote Creek Basin, and on the north by San Francisco Bay. The watershed is mostly rural in the higher elevations and heavily urbanized in the lower reaches, where the project study area is located (COE 1998).

The headwaters of the Guadalupe River originate in the Santa Cruz Mountains near the summit of Loma Prieta. The headwater creeks (Guadalupe, Calero, and Alamitos Creeks) converge to form the Guadalupe River channel about ¼ mile upstream (south) of Blossom Hill Road. The river flows northwest for about 14 miles and ultimately into Alviso Slough at San Francisco Bay. Tributaries to the Guadalupe River include Ross, Canoas, and Los Gatos Creeks. Ross Creek, with a drainage area of 10 square miles; and Canoas Creek, with a drainage area of 19 square miles, are the two tributaries within the upper Guadalupe River feasibility study area. Los Gatos Creek, with a drainage area of 52 square miles, enters the Guadalupe River below the feasibility study area, downstream (north) of I-280 (COE 1998).

2.1 FEASIBILITY STUDY PLANNING PROCESS

The Corps of Engineers, San Francisco District (Corps) is the lead federal agency for the Upper Guadalupe River Flood Control Project and is responsible for the preparation of the feasibility study. The study uses a planning process consistent with the requirements of the Water Resources' Council

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Figure 2-1 Regional Project Site Location

Figure 2-2 Upper Guadalupe River Feasibility Study Limits, Reaches 7 to 12

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Figure 2-3 Guadalupe River Watershed

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Principles and Guidelines, NEPA, CEQA, and the Corps Planning Guidance Notebook. Coordination with the SCVWD has been conducted throughout the study and they have provided technical and financial support. Other coordination has been conducted with the U.S. Fish and Wildlife Service (USFWS) under the provisions of Section 662(b) of the Fish and Wildlife Coordination Act. The USFWS has provided assistance and input on fish and wildlife resources as they relate to plan formulation, impact evaluation, and the development of mitigation measures. The Corps Sacramento District has provided technical assistance on the project. The feasibility study has also been coordinated with the City of San Jose.

The flood control planning process described above is summarized below:

1. Specification of flooding and related land resources problems.
2. Inventory, forecast, and analysis of flooding-related land resource impacts within the study area.
3. Formulation of alternative plans.
4. Analysis and evaluation of the effects of the alternative plans.
5. Comparisons of alternative plans.
6. Identification of the recommended NED plan.

The Corps' Upper Guadalupe River Flood Protection Study (COE 1998) documents the planning process to date. The following sections describe how alternative plans were formulated and the basis for selecting the two alternative plans considered in detail in this EIR/S.

2.2 FORMULATION OF CONCEPTUAL ALTERNATIVE PLANS

Conceptual flood protection alternative plans for the Guadalupe River area, including the present feasibility study area, were presented in the *Final Guadalupe River Interim Feasibility Report* (COE 1985). At that time, the Corps determined that a flood control project would only be economically feasible in the downtown San Jose area. This separate but related project is currently under construction (see sections 3.4 and 6.1.8)

Flood control improvement planning for the upper Guadalupe River was presented in the Corps' *Final Reconnaissance Report: Upper Guadalupe River Flood Control Study* (COE 1989). The study pursued evaluation of two preliminary channel modification plans based on elements considered in the previous Corps report, the Widened Earth Channel Plan and the Earth Bypass and Widened Earth Channel Plan, and determined that a feasibility study was warranted. The Widened Earth Channel Plan included single-sided bank widening of the river. The Earth Bypass and Widened Earth Channel Plan provided the same single-sided bank widening, with an earthen bypass in Reach 7 and 8 (COE 1989). In addition, a No Action Plan was considered.

Since 1989, the Corps has modified the structural alternatives, incorporating flood control methods to increase channel capacity with the goal of optimizing economic benefits and environmental protection, while maintaining hydraulic and engineering feasibility. The *Upper Guadalupe River Interim Feasibility Study Report* (COE 1993) and *Upper Guadalupe River Flood Protection Study Draft Report* (COE 1998) reconsidered a broad range of alternatives that had been evaluated in the previous Corps planning efforts. Non-structural methods included flood warning and evacuation systems, flood-proofing of existing structures, raising the elevation of existing structures, constructing small walls and levees around existing structures, purchasing and removing structures in the floodplain, and providing subsidized flood insurance. These measures were eliminated from consideration due to their economic and logistical infeasibility.

A Stream Restoration Alternative was considered, based on a fluvial geomorphological approach to flood prevention. This alternative incorporates a meandering multi-stage channel that contains the following from the middle of the river

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corridor outward to the banks: a low-flow channel capable of carrying normal river volumes; a bankful channel constructed adjacent to the low-flow channel that is capable of containing sediment and channel-forming flows; and a terraced floodplain that carries high storm flows. This alternative would allow for future meandering changes in the river system within the multistage channel design. This natural meandering would reduce erosion and sedimentation, reducing the need for river maintenance. Additionally, riparian vegetation could be reestablished on the terraced floodplain, providing habitat values for fish and wildlife.

In order to carry high channel flows during storm events, the stream restoration alternative would require widening the floodplain of the river by as much as a few hundred feet, and result in complete reconstruction of the meandering bankful channel. These modifications would result in major impacts to existing native riparian vegetation, shaded riverine aquatic habitat (SRA), fisheries, and would require the removal of approximately 200 households. A Stream Restoration Alternative would therefore be more damaging in the short-term, although potentially biologically preferable over a sufficiently long-term horizon.

The Clean Water Act section 404(b)(1) guideline requirements for consideration of alternatives states that a permit cannot be issued in circumstances where a less environmentally damaging practicable alternative for the proposed project exists. Since other alternatives (discussed below) would be less environmentally damaging in the short-term, a permit could not be issued for the stream restoration alternative under the Clean Water Act section 404(b). The alternative was therefore eliminated from further consideration.

Structural measures outside the river channel included construction of upstream reservoirs or an offstream storage facility that would receive diverted river water during peak flow events. However, there is insufficient undeveloped land for offstream storage. These were also dropped from consideration due to high costs and associated environmental impacts.

Six basic channel modification features were considered by the Corps (COE 1993). These included the following:

- Widened Earth Channel: Increasing flow capacity by widening one side of the existing channel. The excavated bank would be planted with native grasses, shrubs, and trees, with no rock or concrete lining of the channel bottom or side slopes (Figure 2-4).
- Widened Rock Channel: Increasing flow capacity by widening one side of the existing channel, with slightly narrower channels to reduce right-of-way purchase requirements. The channel would be lined with rock to reduce potential erosion.

Figure 2-4 Conceptual Widened Earth Channel Plan Design

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- Earth Bypass Channel: Creating a secondary, parallel channel to carry excess flows during flood events. No rock or concrete lining of the bypass channel bottom or side slopes would be used. The natural channel would not be modified except for at the bypass channel diversion and reentry points (Figure 2-5).
- Covered Bypass Channel: Reinforcing the secondary, parallel channel with a concrete box culvert buried beneath the existing ground surface. The land above the bypass could be used for streets, parking areas, or open space.
- Floodwalls: Reinforced concrete walls built parallel to the tops of both existing channel banks. The natural channel would be preserved (Figure 2-6).
- Floodwalls with Selective Clearing: Clearing of brush and low shrubs along the channel banks to increase the channel capacity. Lower floodwalls would be required, but the channel vegetation would be disturbed.

Full channelization, requiring concrete protection on both channel banks, was not considered feasible due to excessive biological impacts and substantial public controversy and lack of acceptance. High floodwalls were also not considered feasible due to logistical constraints (e.g., existing bridges and interior drainage problems) and public controversy and lack of acceptance. High levees (constructed earthen embankments), were not considered feasible due to excessive real estate costs and similar logistical constraints facing high floodwall construction.

The *Upper Guadalupe River Flood Protection Study Draft Report* (COE 1998) analyzed in detail three action plans including two Channel Widening Plan alternatives, a Bypass Channel Plan, and the No Action Plan. Currently, the capacity of the Guadalupe River is as low as 6,300 cubic feet per second (cfs) within some portions of the study area. The Channel Widening Plans included the Willow Glen and Valley View alternatives. The Willow Glen Plan, the smallest plan considered, would provide flood protection for up to a 20-year flood event (approximately 9,000 cubic feet per second [cfs]). The Valley View Plan, the intermediate plan, would provide flood protection for up to a 50-year flood event (12,000 cfs). The Bypass Channel Plan, the largest plan, would provide flood protection for up to a 100-year flood event (14,600 cfs) (COE 1998). All three plans would provide improvements on Canoas Creek to address the backwater effects resulting from improved flood protection on the Guadalupe River (COE 1998).

The SCVWD was responsible for formulating in detail the Bypass Channel Plan in a separate planning process, as described in section 1.3.2). The SCVWD Bypass Channel Plan incorporates aspects of the widened channel, bypass channel, and floodwall/levees (Parsons Engineering Science 1997) (see section 6.1.8 for a detailed discussion). This feasibility study has slightly modified the SCVWD plan, based on Corps engineering input, and called it the Bypass Channel Plan.

2.3 FORMULATION AND SCREENING OF COMPREHENSIVE FLOOD PROTECTION ALTERNATIVES

The formulation and screening of alternative comprehensive plans for flood protection is detailed in the Corps' Upper Guadalupe River Flood Protection Study (COE 1998). Briefly, the plan formulation process began by identifying where along the river "breakout areas" associated with flood events of various magnitudes were likely to occur, the associated economic costs, and the environmentally and

Figure 2-5 Conceptual Earth Bypass Channel Plan Design

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Figure 2-6 Conceptual Floodwall Plan Design

socially acceptable control measures that could be applied. Alternative plans were then formulated by combining the least-cost control measures that would result in the greatest net economic benefits.

The results of this process were the development of the two Channel Widening alternative plans (Willow Glen and Valley View), both of which involved a widened channel at specific points, as well as low levees and/or low floodwalls at other points, and the Bypass Channel Plan. The largest plan would provide the greatest level of flood protection, but would also require a greater level of construction and temporary disruption to the environment.

The feasibility study identified benefit-to cost ratios of 5.4:1, 3.1:1, and 1.7:1 for the Willow Glen, Valley View Plan, and Bypass Channel Plans, respectively (COE 1998). Although the Willow Glen Plan has the highest benefit-to-cost ratio, it has lower net benefits than the Valley View Plan and the Bypass Channel Plan. The study determined that the Willow Glen Plan would remove only 400 acres and 15 percent of existing structures out of the 100-year floodplain, while the Valley View Plan would remove 1,300 acres and 27 percent of structures out of the 100-year floodplain, and the Bypass Channel Plan would remove 2,000 acres and 86 percent of structures out of the 100-year floodplain (COE 1998). Improvements on Canoas Creek would not increase protection against a 100-year flood event. The 880 homes in the study area adjacent to Canoas Creek would still require floodplain insurance. Additional economic analysis, project cost comparison and analysis, benefits analysis, and cost-sharing analysis is found in the Corps Feasibility Study Report (COE 1998).

2.4 ALTERNATIVES CONSIDERED FOR FURTHER STUDY

2.4.1 Channel Widening Plan

This EIS presents a detailed comparison of the Valley View Plan and the Bypass Channel Plan. Although it has the highest benefit-to-cost ratio, the Willow Glen Plan has not been included because it provides an unacceptably low level of flood protection and is unlikely to ever be constructed. The SCVWD would prefer to see the Bypass Channel Plan constructed since it provides the greatest level of protection. The Corps has determined that the NED Plan is the Valley View Plan, so this plan and the Bypass Channel Plan are being presented in this EIS. Although the SCVWD has proposed construction of the Bypass Channel Plan, the federal financial contribution may be limited to what would have been spent to construct the smaller Valley View Plan. Alternatively, the Corps headquarters may cost-share the Bypass Channel Plan as the project is located in an urban area. This policy decision will be made by the Corps in Washington D.C.

The Valley View Plan (called in this EIR/S the Channel Widening Plan) combines several of the engineering alternatives discussed above. The combination of the alternatives is based on maximizing net economic benefits through flood protection (if net economic benefits can be achieved) coupled with acceptable impacts on the environment after mitigation.

The Channel Widening Plan proposes approximately 50-year flood protection along reaches 7, beginning at the SPRR Bridge, through 12, at Blossom Hill Road of the upper Guadalupe River, and the lower part of Ross Creek. Improvements along Canoas Creek would address backwater effects resulting from improved flood protection on the Guadalupe River. Improvements in flood protection would be accomplished through a combination of channel widening, primarily along the east bank only, and the installation of low floodwalls on the existing top of the bank at a few strategic locations along the river. Procedures for channel widening involve excavating a bench on the existing bank at an elevation 3 feet above the channel bottom. The toe of the bench would be revegetated to mitigate losses of riparian forest and aquatic habitat. In most areas, cut slopes associated with channel widening would be compacted and smoothed to a slope of 1.5 feet horizontal to 1.0 feet vertical (1.5H:1V); they would not be covered with gabions or riprap. Cut slopes would be internally reinforced to provide stability. Slopes would be hydroseeded to provide vegetation cover for stabilization, but this is not expected to mitigate the loss of riparian forest. Gabions or crib walls (a design using cross-bracing on near vertical to vertical slopes) would be used to stabilize steeper cut slopes in reaches 10A and 10C.

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Maintenance roads 12-feet wide, based on Corps engineering criteria and cost-sharing requirements, would be located at the top and toe of each cut slope. Access ramps to the benches would be located to minimize disturbance to biological habitats and minimize real estate costs.

In the Channel Widening Plan, the loss of riparian forest cannot be fully mitigated through the revegetation of disturbed areas. As a result, the Channel Widening Plan proposes additional mitigation through riparian forest and SRA cover creation or enhancement at a number of sites along the river (discussed in section 4.4 below).

In general, construction procedures would be as described for comparable portions of the Bypass Channel Plan in section 2.4.2. A Channel Widening Plan Operations and Maintenance Program defining erosion control and other types of maintenance detailed during the design phase would meet or exceed the program adopted by the SCVWD for the Bypass Channel Plan (personal communication, G. Dennis 1996). All fish passage improvements to the natural river channel within the feasibility study area that are proposed under the Bypass Channel Plan would be included under the Channel Widening Plan.

Residential property requiring removal would be purchased and individuals relocated, while businesses would be relocated in similar facilities outside of the feasibility study area.

The four reaches of construction under the Channel Widening Plan would require approximately 3 years to complete, limiting activity to the summer low-precipitation period (April 15 to October 15) (personal communication, G. Dennis 1996). Any construction outside this period would require prior approval from the California Department of Fish and Game.

A reach-by-reach description of the Channel Widening Plan follows, defined by geographical endpoints (railroads, streets), and engineering stations (measured in feet; for example, 713+00 is 71,300 feet along the river as measured south from the Bay, and 713+50 is 71,350 feet). Terminology describing habitats follows section 4.4, Biological Resources. The plan's components are summarized in Table 2-1.

Reach 7: SPRR Bridge to Union Pacific Railroad (UPRR) Bridge (Sta. 741+00 to 781+00) — East Widened Earth Channel with Bench. The east bank would be widened, creating a bench roughly 75 feet wide. Riparian forest restoration would occur along the toe of the bench to partially mitigate habitat losses due to channel widening. A maintenance-access road would be constructed along the top of the bank. The plan design for this reach allows a tie-in to the Reach 6 bypass channel that is expected to be constructed independently by the SCVWD. Bridges at Willow Street and Alma Avenue would be replaced. Four businesses located on Willow Street and Lelong Street in the downstream part of the reach would be relocated. A widened channel and floodwall would be constructed within the Elks Lodge parking lot, extending from West Alma Avenue south to the SPRR tracks at the boundary of Reach 8.

Table 2-1 Comparison of Channel Widening Plan and Bypass Channel Plan Alternatives

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Compensatory mitigation is proposed on the west bank between the SPRR and SR 87. Existing ruderal, herbaceous, and otherwise degraded habitat would be replanted to provide an expanded area of riparian forest. Additional mitigation is proposed just north of Alma Avenue along the top of the west bank on the graded SCVWD easement.

- Reach 8: UPRR Bridge to Willow Glen Way (Sta. 781+00 to 795+00) — Floodwalls.** Low floodwalls 1 to 3 feet high would be constructed along the existing tops of both the east and west banks.
- Reach 9: Willow Glen Way to Curtner Avenue (Sta. 795+00 to 845+00) — Bridge Replacement.** The Willow Glen Way Bridge would be replaced with a new 120-foot long structure. The existing pedestrian bridge would be removed and salvaged for the City. A mitigation area is proposed at station 829+00.
- Reach 10A: Curtner Avenue to Canoas Creek (Sta. 845+00 to 857+00) — Widened Earth Channel with Bench.** The east bank would be widened, creating a bench 10 to 40 feet wide. Riparian forest would be planted on the toe of the bench where space allows, whereas the new top of the bank would be along the shoulder of Almaden Road.
- Reach 10B: Canoas Creek to Berkshire Drive (Sta. 857+00 to 888+00) — No Improvements.** No flood control modifications are proposed along this reach. Construction of a rock-lined low-flow channel is proposed. To mitigate construction impacts elsewhere, riparian forest would be created or enhanced within the 50- to 80-foot wide channel bottom area from the northbound Almaden Expressway bridge southward to the upstream end of the reach. The plantings along the toe of the west bank would extend northward from the Almaden Expressway bridge to the downstream end of the reach.
- Reach 10C: Berkshire Drive to Capitol Expressway (Sta. 888+00 to 913+50) — Widened Earth Channel with Bench.** At the downstream end of this reach, the east bank would be widened out into adjoining agricultural land for a length of about 400 feet. Upstream, channel widening would shift to the west bank, continuing as far as Hillsdale Avenue. Both banks would be widened from Hillsdale Avenue to Capitol Expressway, and the Hillsdale Avenue Bridge would be replaced. Riparian forest would be restored on the toes of the benches. An additional mitigation area is proposed along the terrace of the west bank in ruderal herbaceous habitat.
- Reach 11: Capitol Expressway to Branham Lane (Sta. 913+50 to 961+00) — Widened Earth Channel with Bench.** No flood control modifications are proposed for the first 2,100 feet of the reach until the vicinity of Station 934+00. At this point, widening of the east bank is proposed for 450 to 500 feet, with the top of the cut slope extending into an existing SCVWD easement that abuts the adjacent residential area. One water well on the east bank would be relocated. In the vicinity of a concrete apron, channel widening would shift to the west bank for 200 to 400 feet then shift back to the east bank, continuing upstream along the SCVWD's easement to Branham Lane. The toes of the benches would be revegetated to partially mitigate riparian forest losses. Within the downstream portion of this reach, riparian forest creation or enhancement is proposed in five discrete areas of predominantly ruderal herbaceous habitat along the upper part of the west bank adjacent to Orchard Drive and Almaden Expressway. Large oak trees along the roadside would be avoided.
- Reach 12: Branham Lane to Blossom Hill Road (Sta. 961+00 to 1017+35) — No Improvements.** No flood control modifications are proposed under the Channel Widening Plan. Compensatory mitigation in the form of riparian forest restoration is proposed along the west bank and river terrace of this reach. The proposed mitigation area supports mostly ruderal herbaceous vegetation with scattered valley oaks, coast live oaks, and sycamores along the higher river terrace slopes.

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Ross Creek: Almaden Expressway to 750 feet Upstream of Jarvis Avenue — Floodwalls. Low floodwalls 1 to 3 feet high and 5,200 feet long would be constructed on both creek banks. The creek channel would be widened to a 27-foot wide trapezoidal design from the main river channel to 750 feet upstream of Jarvis Avenue. New culverts would be constructed under Almaden Expressway and Jarvis Avenue.

Canoas Creek: Almaden Expressway to 1,400 feet Upstream of Nightingale Drive — Floodwalls. Culverts beneath Almaden Expressway and Nightingale Drive would be replaced, and low floodwalls 1 to 3 feet high and 2,800 feet long would be constructed on both creek banks.

2.4.2 Bypass Channel Plan

The Corps feasibility study Bypass Channel Plan addresses flood control improvements and biological mitigation along the same stretches of the Guadalupe River (between the SPRR Bridge and Blossom Hill Road), Ross Creek, and Canoas Creek as discussed for the Channel Widening Plan. The Bypass Channel Plan would provide, however, flood protection on the river and Ross Creek for up to a 100-year flood event. Flood improvements on Canoas Creek would address backwater effects resulting from improved flood protection on the Guadalupe River (COE 1998).

The Bypass Channel Plan construction would ensure relocation of existing utilities (such as water, gas, electricity, storm sewer, and telephone lines), water wells, and sanitary siphons. Homes and property requiring removal would be purchased and individuals relocated, and businesses would be relocated to similar facilities outside the feasibility study area. Areas of erosion affecting the river banks would be repaired and protected pursuant to the Maintenance Activities and Guidelines procedures (Parsons Engineering Science 1997). Construction of the Bypass Channel Plan as contemplated in the Corps' Upper Guadalupe River Protection Study (COE 1998) would extend over a 3-year period, interrupted only during the rainy season.

A brief description of the Corps feasibility study Bypass Channel Plan follows. A detailed description of construction in Reaches 7 through 12, Ross Creek, and Canoas Creek can be found in the corresponding sections of the SCVWD EIR/S (Parsons Engineering Science 1997). Bypass Channel Plan components are summarized in Table 2-1.

Reach 7: SPRR Bridge to UPRR Bridge (Sta. 741+00 to 781+00) — Gabion Bypass Channel. The bypass channel with stepped gabions would be constructed on the east side of the river, with a bottom width of between 30 and 85 feet. A maintenance access road would be placed on the bypass channel bottom. Access to the bypass channel would be from ramps located on the east bypass bank and to the river from ramps at Alma Avenue as well as ramps to the river near Willow Street. Vegetation in the existing river channel would be preserved.

Construction would require relocation of 13 commercial businesses. A floodwall would be constructed within the Elk's Lodge parking lot, extending from West Alma Avenue south to the SPRR tracks at the boundary of Reach 8. The bypass channel and floodwall would remove a portion of the Elk's Lodge parking lot. New bridges crossing the bypass channel at Willow Street and at West Alma Avenue would be built.

An eroded 450-foot long section of the west bank would be stabilized using boulders, root wads, soil, live cuttings, or other methods consistent with SCVWD's approved flood control program.

Reach 8: UPRR Bridge to Willow Glen Way (Sta. 781+00 to 795+00) — Gabion Bypass Channel. The gabion-lined bypass channel would continue parallel to the east river bank, with an 85-foot-wide bottom and 1:1 side slopes. The maintenance road would continue along the bypass channel bottom. Access to the bypass channel would be from ramps located on the east bypass bank and to the river from an existing maintenance road and ramp on the west bank. Elsewhere, vegetation in the existing river channel would be preserved. Riparian forest would be removed for the bypass channel entry weir.

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Construction would require the removal of 23 homes on the west side of Mackey Avenue.

Reach 9: Willow Glen Way to Curtner Avenue (Sta. 795+00 to 845+00) — Widened Gabion/Cribwall. The east bank of the river would be widened up to 60 feet, creating a bench 20 to 70 feet wide and between 5 to 12 feet above the river bottom. The maintenance road would be placed along the bench. Two short bypasses would be constructed east of the river to avoid areas of high quality riparian forest, to reduce ecological impacts. One 500-foot-long bypass between Willow Glen Way and Pine Avenue would have a bottom width of 40 feet with stepped gabions on 1:1 side slopes. The second bypass upstream of Malone Road would be located on currently vacant land east of the river, and would have a bottom width of 40 feet with a cribwall on the east bank built at a 1:6 slope. Within the bypass, the maintenance road would be located on the bypass channel bottom. Portions of excavated bench areas would be revegetated.

Six homes, two partial backyard areas, and two businesses would be impacted. Existing water wells and facilities operated by the San Jose Water Company (SJWCo) would be relocated. The Willow Glen Way bridge would be replaced.

Two eroded sections of the west bank, totalling 500 feet in length, would be stabilized using boulders, root wads, soil, live cuttings, or other methods consistent with SCVWD's approved flood control program.

Reach 10A: Curtner Avenue to Canoas Creek (Sta. 845+00 to 857+00) — Widened Cribwall Channel. East bank widening would continue, creating a bench from 18 to 40 feet wide, with an elevation about 5 feet above the present channel bottom, and a crib wall on 1:6 slopes (Parsons Engineering Science 1997). The maintenance road would be placed along the bench. Riparian vegetation along the east bank would be removed. The Curtner Avenue bridge would be replaced. Portions of excavated bench areas would be revegetated.

Reach 10B: Canoas Creek to Berkshire Drive (Sta. 857+00 to 888+00) — Levee and Revegetation. A levee 4 feet high with a top width of 15-18 feet and 2:1 side slopes would be constructed on the west bank between the northbound and southbound Almaden Expressway. A 4-foot-high floodwall would be built at the Lincoln Avenue overpass for 300 feet, and a rock-lined low-flow channel would be made by reconfiguring rocks. A maintenance road would be built on the existing east bench upstream of northbound Almaden Expressway, with access to the road provided by a ramp upstream of Almaden Expressway. A Pearl Avenue bridge would be built in coordination with the City of San Jose, replacing the Hillsdale Avenue bridge, which would be removed in Reach 10C. Riparian forest would be created or enhanced from the northbound Almaden Expressway bridge southward to the upstream end of the reach. The plantings along the toe of the west bank would extend northward from the Almaden Expressway bridge to the downstream end of the reach.

Reach 10C: Berkshire Drive to Capitol Expressway (Sta. 888+00 to 911+75) — Widened Gabion Channel. The east bank would be excavated creating a bench between 20 and 58 feet wide, 8 feet above the present channel bottom. A maintenance road would be placed along the bench. For most of this reach, gabions would be used above the bench, and the slope from the bench down to the channel bottom would be left natural. Between Hillsdale and Capitol Expressway bridges, above the maintenance road the bank would be lined with cribwalls at a 1:6 slope, while the bank below would be lined with stepped gabions. A portion of the depressed bench would be revegetated.

A portion of the Valley View Packing Plant would be removed.

Reach 11A: Capitol Expressway to Bryan Avenue (Sta. 911+75 to 937+60) — Widened Gabion Channel. The east bank would be widened from Capitol Expressway south for approximately 300 feet, where a 700-foot long bypass channel with a bottom width of 50 feet and 2:1 unlined slopes would begin.

Figure 2-9, depicting reach 11a in the draft EIR/S was inaccurate and has been deleted. Contrary to what this figure depicted, there would be no riparian forest vegetation on the east bank of reach 11a upstream of the bypass channel. Bypass channel slopes would be revegetated. After this point, the east bank would again be widened, where a maintenance road would be placed. Gabions would line the 1:1 slope above the bench. Existing concrete rubble within the river channel would be removed to enhance fish passage.

Reach 11B: Bryan Avenue to Ross Creek (Sta. 937+60 to 947+90) — West Bank Widening with Cribwalls.

The west bank would be widened, creating an earth bench 40 feet wide and 5 feet above the channel bottom. The 1:6 side slope above the bench would be lined with cribwalls, and the 1:1 slope below lined with stepped gabions. Maintenance roads would be placed on the widened bench and on top of the east bank.

Two homes would be impacted and one SJWCo water well would be relocated.

Reach 11C: Ross Creek to Bryan Avenue (Sta. 947+90 to 960+00) — West Bank Widening with Cribwalls.

The west bank would be widened to create a bench up to 60 feet wide with a 1:6 side slope lined with cribwall, approximately 6 feet above the channel bottom. A maintenance road would be placed on the bench and along the top of the east bank. Vegetation on the east bank would be avoided.

Reach 12: Branham Lane to Blossom Hill Road (Sta. 961+00 to 1017+35) — Widened Earth Channel with Bench. The west bank would be widened 25 feet between the seasonal percolation ponds and Blossom Hill Road to create a vegetation bench. Levees would be constructed and raised 6 feet on both banks between Chynoweth Avenue and Route 85, with maintenance roads placed on top of both the east and west banks.

Large areas of riparian, wetland, and open-water habitat would be planted in the reach area. Reduction in percolation pond areas would be offset by construction of 4.5 acres of pond offstream. Ruderal vegetation would be removed.

Ross Creek: Almaden Expressway to 750 feet Upstream of Jarvis Avenue — Channel Widening with Concrete Mat.

The creek channel would be widened to a 35-foot wide trapezoidal design from the main river channel to 750 feet upstream of Jarvis Avenue. Both banks would be lined with articulated concrete mats at a 1:1 slope. New culverts would be constructed under Almaden Expressway and Jarvis Avenue. The Ross Creek culvert entering the Guadalupe River in Reach 11C would be extended 80 feet, with a concrete apron. The existing sanitary sewer pipe under Almaden Expressway would be relocated in coordination with the City. Mitigation for fisheries impacts along Ross Creek would include stepped fish pools, a low-flow channel to enhance fish passage, and weirs.

Canoas Creek: Almaden Expressway to 1,400 feet Upstream of Nightingale Drive — Floodwalls. Culverts beneath Almaden Expressway and Nightingale Drive would be replaced, and low floodwalls 1 to 3 feet high and 2,800 feet long would be constructed on both creek banks.

As participants in the National Flood Insurance Program (NFIP), the communities along the Guadalupe River are required to adhere to floodplain management policies and adopt ordinances that represent sound land use practices. The NFIP is administered by the Federal Emergency Management Association (FEMA) through the Federal Insurance Administration. FEMA produces Flood Insurance Rate Maps for the communities participating in the NFIP that identify flood hazard areas (i.e., 100-year floodplain) and restrict development in these areas. With implementation of the Bypass Channel Plan, participation in the NFIP would no longer be required except in areas remaining susceptible to flooding from Canoas Creek.

Proposed Project and Alternatives

Recreation Plan

The Corps Upper Guadalupe River Feasibility Study has been coordinated with the City of San Jose, which has agreed to help fund recreation features associated with the project. These recreation amenities are considered part of the Bypass Channel Plan.

The feasibility study prepared by the Corps includes a recreational trail that would be a part of the Bypass Channel Plan. The recreational trail and associated facilities would be within the floodway, except in Reaches 9 and 10a, where it would fall outside the feasibility study area. In these reaches, the trail would run mostly along Almaden Road, and would be designed to encourage limited public access along the river for a distance of approximately 4 miles. The recreational trail would be constructed at the same time as the Bypass Channel, but would be contingent upon establishment of a wider right-of-way as proposed by the City of San Jose as part of their widening plan for this road. The Bypass Channel Plan recreational trail route is illustrated in Figure 2-7.

The trail would generally be 10 feet wide and paved, located on maintenance roads constructed on the widened bench adjacent to natural channel (see Figure 2-8) or on the levee between the bypass channel and the natural channel. Vehicle barriers at the trail access points would preclude motorized vehicles except for maintenance vehicles. Safety features would include call boxes, safety lighting at railroad and thoroughfare underpasses, directional signs, and selectively located fencing and railing. Approximately 3,800 feet of 3-foot high chain-link fence and approximately 1,500 feet of railing is proposed along selected portions of the trail. Public amenities would include picnic areas, benches, a par course, restrooms with drinking fountains, and interpretive signs.

2.4.3 No-Action Alternative

The No-Action Alternative would mean no change from the existing situation. No flood control project, structural or non-structural, would be implemented for the upper Guadalupe River by the federal government. The river would continue to periodically flood, damaging adjacent homes and businesses along the river. The City of San Jose would continue to participate in the National Flood Insurance Program.

Figure 2-7 Bypass Channel Plan Recreational Trail

Proposed Project and Alternatives

Figure 2-8 Recreational Trail on Reach 7, Looking Downstream

