

Santa Barbara County Fish and Game Commission

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S B COUNTY
PLANNING & DEVELOPMENT

Grant Application

As determined by the Fish and Game Code of the State of California, all fines monies derived from code violations shall be equally divided between the Department of Fish and Game and the county in which the violation occurred. The Santa Barbara County Fish and Game Commission (SBCFGC) is charged with recommending expenditures of fine revenues to the Santa Barbara County Board of Supervisors. State law requires that grants of such monies must be utilized for the protection, conservation, propagation, preservation, or education as they pertain to fish and wildlife.

Non-profit organizations with an IRS 501 (c) (3) tax-exempt status or purpose consistent with the definition of 501 (c) (3) status are eligible to apply.

A proposed project or program must clearly qualify for funding under section 13103 of the California Fish and Game Code - (Please Refer to Attachment A). Projects funded under this Section must be expended for the protection, conservation, propagation, preservation, or education pertaining to fish and wildlife within or outside the County. These grants are awarded annually and current grantees must renew their applications. Grant funds are limited and awards are typically less than \$2,000.

Grant Process

- Each year the SBCFGC will request grant proposals and provide a submittal deadline. Announcement of the grant period will be made during a noticed meeting of the SBCFGC and posted on the Santa Barbara County Planning and Development website at <http://sbcountyplanning.org/>, and noticed with a press release.
- All members of the Fish and Game Commission receive copies of grant applications prior to the Commission's review at a noticed meeting of the SBCFGC.
- The SBCFGC will discuss each grant application and the benefits the program or project has for protection, conservation, propagation, preservation, or education as they pertain to fish and wildlife. Attendance at the meeting by the grant applicant is strongly encouraged to allow for questions from the SBCFGC members.
- The SBCFGC will select grants that will be recommended to the County Board of Supervisors for approval of funding. A report to the County Board of Supervisors will be prepared with each recommended grant attached.
- Successful grant applicants will be contacted following County Board of Supervisors approval.

GRANT APPLICATION

Please complete each section of this application. Incomplete applications may be rejected.

PART 1: PROJECT TITLE

Project Title: San Jose Creek Steelhead Recovery Project

Amount Requesting: \$5,000

PART 2: GENERAL INFORMATION

Organization:			
Cachuma Resource Conservation District			
Contact Person:			
Anna Olsen, Executive Director			
Address			
920 E. Stowell Rd.			
City	State	Zip	
Santa Maria	CA	93454	
Phone	Fax	Email (most communication will be by email)	
805-868-4013		aolsen@rcdsantabarbara.org	

PART 3: PROJECT DESCRIPTION

Note: Please state how the program or project complies with FG Code 13103 (Attachment A) and which provisions apply. If the project is for educational purposes (FG Code 13103 a.), attach a curriculum and examples of any teaching aids to be used.

Pursuant to California Fish and Game Code Sections 13100(a), 13103(e), this project proposes to protect and conserve wild Southern California Steelhead populations and restore damaged habitat by removing two substantial barriers and one moderate impediment to steelhead migration in San Jose Creek, located in Santa Barbara County. An obsolete dam and two road crossings which preclude steelhead migration will be removed and replaced with two bridges to restore steelhead migratory opportunities while assuring landowners reliable access which does not impair steelhead migration.

Steelhead are federally endangered. San Jose Creek has been designated by NMFS as Critical Habitat for steelhead. The creek is one of few "Core 1" (i.e. highest priority) habitats for steelhead pursuant to National Marine Fisheries Service's 2012 Steelhead Recovery Plan. The Recovery Plan guides efforts to recover steelhead and recommends removing barriers to migration as a "critical recovery action."

The project is being implemented by the Cachuma Resource Conservation District, Santa Barbara Urban Creeks Council, two private landowners / farming families and other partners.

Initial funding from private foundations, the California Department of Fish and Wildlife's Fisheries Restoration Grant Program, the primary landowner, the City of Goleta, the National Fish and Wildlife Foundation, and the State Coastal Conservancy has funded Waterways Engineering, Inc. to survey the creek, conduct a feasibility analysis, generate alternatives and engineer and design the preferred

PART 4: BENEFITS TO SANTA BARBARA COUNTY WILDLIFE

Please describe how this project would directly or indirectly benefit Santa Barbara County's wildlife.

This project will remove the last man-made barriers to steelhead migration in the San Jose Creek Watershed, piggy-backing on the City of Goleta's recent project to provide steelhead access through the San Jose Creek Flood Control Channel in Old Town Goleta. The project will open over two miles of high quality, perennial spawning and rearing habitat near the San Marcos Trout Club - an area capable of generating several thousand steelhead smolts per year. San Jose Creek's restored steelhead run will benefit other wildlife, including herons and species that prey on young steelhead. Removal of the dam and two road crossings will benefit other wildlife including special-status aquatic species such as western pond turtle, two-striped garter snake, and California rough-skinned newt. Removal of eucalyptus trees will benefit riparian species including songbirds and raptors.

PART 5: TIMELINE. For large, multi-year projects, the SBCF&GC may ask for this section to be filled out. For smaller yearly projects or where an item or items are being purchased one time or the project is one event, this section does not apply.

Please provide an outline of your project including the milestones and anticipated achievement dates.

	Date
Project Start:	2013
Milestone: Waterways, Inc. completes design to 30% level. Funded by CDFW FRGP. 2-2015	3-20-15
Milestone: Biologist completes surveys. June 2017. Funded by National Fish and Wildlife Foundation (secured) and County Fish and Wildlife Commission (pending)	8-30-17
Milestone: Waterways, Inc. completes design to 100%. January 2017. Funded by Coastal Conservancy & National Fish and Wildlife Foundation	6-1-17
Milestone: Biologist completes biology report and riparian restoration plan. September 2017 Funded by City of Goleta & National Fish and Wildlife Foundation	12-1-17
Milestone: Construction. Fall 2018.	12-21-18
Anticipated Completion Date	12-31-18

PART 6: BUDGET

Please use the form below to list the summary of your budget and other funding sources. Attach a detailed list of items such as equipment, supplies, and other tangible items to be purchased. Receipts must be supplied for all expenditures. The Fish and Game Commission traditionally does not fund administration costs, such as labor, overhead and travel.

\$ Amount Requested from the Fish and Game Commission:	\$5,000
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GRANT APPLICATION

alternative to the 100% level. Partial funding is in-hand to conduct biological surveys, to prepare a biological report identifying environmental protection measures which will be included in the project design, and to develop a riparian restoration plan to replant the area after the dam and roads are removed. Permitting is also partly funded.

The next step is to fully fund the biological resources surveys and report - which are essential to the success of the steelhead habitat restoration project - to fully fund permitting, being undertaken by Suzanne Eledge Land Use Planning and Permitting Services.

GRANT APPLICATION

Budget Breakdown:

Item Description	Per Unit Cost	Quantity	Total
1. County, State and Federal Permitting - \$1,750	\$1,750	1	\$ 1,750
2. Biological Surveys, Biological Reports and Riparian Restoration Plan - \$3,250	\$3,250	1	\$3,250
Total			\$ 5,000

Please add additional lines as needed

Other Funding Sources

In-kind or Other Funding Sources:	
1. National Fish and Wildlife Foundation (secured)	\$ 72,794
2. California CDFW FRGP (secured)	\$ 20,209
3. City of Goleta (secured)	\$ 3,250
4. Private Foundations for design (secured)	\$ 14,000
5. Private Foundations for permitting (pending)	\$ 6,000
6. EDC In-Kind Donation	\$ 560
7. Cachuma RCD In-Kind Donation	\$ 2,714
8. Landowner Cash Contribution + In-Kind	\$ 2,220
9. California Coastal Conservancy (secured)	\$ 33,645
Total Cost of project*	\$ 2,100,000

* This includes the cost of engineering/design, biological surveys/reports, permitting and the estimated cost for construction.

PART 7: QUALIFICATIONS (optional)

Please describe the personnel who will be working on this project and their background and pertinent qualifications. Name	Background/Qualifications
Lawrence Hunt Biological Consulting	Lawrence Hunt is a County-qualified wildlife biologist who worked extensively on the Southern California Steelhead Recovery Plan for NOAA. See attached CV.
Waterways Engineering	Brian Smith and Gregor Patsch, Engineers. See attached CVs.
Cachuma RCD	Anna Olsen, Executive Director.
Suzanne Eledge Permitting and Planning Services, Inc.	Laurel Fisher Perez, Vice President and Principle Planner.
Environmental Defense Center	Brian Trautwein is the EDC's Environmental Analyst / Watershed Protection. See attached CV.

PART 8: PROJECT PARTNERS (optional)

The Commission strongly encourages prospective grantees to seek partnerships in completing projects. Please list any organizations, groups or agencies that have agreed to participate in your project. Give a brief description of each organization's role in your project. Include any monetary contribution to the project, if any. Please attach a letter of support from each organization. If this is not possible, please include a name and phone number of a person from each organization who can be contacted to verify participation.

Participating Organization	Role	Money Contributed	Letter of Support	Name	Phone Number
Landowners	Permission, Review Plans, Selection of Alternative	\$1,800 + \$420 in-kind	Y	Justin Bosio Gary Cavaletto	805-680-4347
Cal. Department of Fish and Wildlife	Funding and Review plans	\$20,209	-	Mary Larson, Senior Environmental Scientist	563-342-7186
City of Goleta	Funding and letter of Support	\$3,250	Y	Michelle Green, City Manager	805-961-7500
Santa Barbara County Flood Control District	Letter of Support	-	Y	Tom Fayram, Director	805-568-3440
Santa Barbara Urban Creeks Council	Letter of Support	-	Y	Rick Frickmann, President	805-680-8188
Congresswoman Lois Capps	Letter of Support	-	Y	NA	NA
Congressman Salud Carbajal	Letter of Support	-	Y	Salud Carbajal	805-730-1710
County Supervisor Janet Wolf	Letter of Support	-	Y	Janet Wolf	805-568-2191
Senator Hannah-Beth Jackson	Letter of Support	-	Y	Hannah-Beth Jackson	805-965-0862
Cachuma RCD	Project Lead and Management, Grant-Writing	\$2,714 in-kind	-	Anna Olsen, Executive Director	805-868-4013
NRCS	Technical Review of Plans	\$160 in-kind	-	Jeff Rodriguez	805-928-9269
Environmental Defense Center	Conceived Project, Review Plans, Grants	\$560 in-kind	-	Brian Trautwein, Watershed Program	805-963-1622
James S. Bower Foundation	Funder	\$12,000 + \$6,000 pending	-	Jon Clark, President	805-564-8814
Santa Barbara Foundation	Funder	\$2,000	-	Sharyn Main, LEAF Program Director	805-963-1873
California Coastal Conservancy	Funder	\$33,645	-	Rachel Couch	805-845-8853
National Fish and Wildlife Foundation	Funder	\$12,194	-	Anne Butterfield, Manager IDEA	415-243-3106

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PART 10: MANDATORY REPORTING

A final report demonstrating how the objective of the grant was achieved is due 60 days from the completion of all projects. On longer term, more complex projects, once those projects are initiated, a progress report is required every 90 days until the project is completed unless the SBCF&GC decides due to the nature of the project, progress reports are not needed.

	Date	Actual Date Submitted (Do not write here)
Progress Report	06/30/17	
Progress Report	09/30/17	
Final Report to SBCFGC	12/30/17	

NOTE: Receipts for expenditures to date must be submitted with each progress report as applicable.

GRANT APPLICATION

PART 12: AGREEMENT

If awarded funds from the Santa Barbara County Fish and Game Commission, I agree to:

- Complete the project as indicated and provide all reports and products as indicated in this application; including any amendments requested by the SBCFGC.
- Spend funds as outlined in this application and/or as voted upon by the SBCFGC. Any request to change how funds are spent must be approved by Santa Barbara County prior to the actual expenditure.

I understand that failure to do so may void this contract with the SBCFGC. Failure to provide such reports and products or use of funds other than voted upon, may result in the loss of granted funds and exclusion from future grant opportunities.

Anna Olsen

Print Name



Signature

Executive Director

Title

4/4/17

Date

Please Return Grant Applications (13 copies) to:

**Santa Barbara County Planning and Development
Attn. Fish and Game Commission
123 E. Anapamu St. Santa
Barbara, CA 93101**

**Attachment A
FISH AND GAME CODE
SECTION 13100-13104**

13100. (a) The amounts paid to and retained in the county treasury pursuant to Sections 12009 and 13003 shall be deposited in a county fish and wildlife propagation fund and expended for the protection, conservation, propagation, and preservation of fish and wildlife, under the direction of the board of supervisors, pursuant to this chapter.

(b) All proposed expenditures from a county fish and wildlife propagation fund shall be reviewed first at a regular meeting of the county board of supervisors or its designated county fish and game commission to ensure compliance with Section 13103.

13101. (a) The board of supervisors of any county may enter into a written agreement with the board of supervisors of one or more counties for the expenditure of any funds deposited in its fish and wildlife propagation fund pursuant to Section 13100 for any purpose authorized by Section 13103 in either, or any, of the counties for the joint benefit of both, or all, of the counties as the judgment of the boards of supervisors may direct. The purchase of real property necessary for that purpose is lawful and title thereto shall be taken in the joint names of each county which contributes funds therefor. The property may be deeded to the state upon the express condition that it shall be employed for the purposes of this chapter within the counties.

(b) The board of supervisors of one or more counties may enter into a written agreement with the department for the expenditure of any funds deposited in its fish and wildlife propagation fund pursuant to Section 13100 for any purpose authorized by Section 13103.

13102. Expenditures from the fish and game propagation fund of any county shall be subject to the provisions of Division 3 (commencing with Section 29000) of Title 3 of the Government Code.

13103. Expenditures from the fish and wildlife propagation fund of any county may be made only for the following purposes:
(a) Public education relating to the scientific principles of fish and wildlife conservation, consisting of supervised formal instruction carried out pursuant to a planned curriculum and aids to education such as literature, audio and video recordings, training models, and nature study facilities.

(b) Temporary emergency treatment and care of injured or orphaned wildlife.

(c) Temporary treatment and care of wildlife confiscated by the department as evidence.

(d) Breeding, raising, purchasing, or releasing fish or wildlife which are to be released upon approval of the department pursuant to Sections 6400 and 6401 onto land or into waters of local, state, or federal agencies or onto land or into waters open to the public.

(e) Improvement of fish and wildlife habitat, including, but not limited to, construction of fish screens, weirs, and ladders; drainage or other watershed improvements; gravel and rock removal or placement; construction of irrigation and water distribution systems; earthwork and grading; fencing; planting trees and other vegetation management; and removal of barriers to the migration of fish and wildlife.

(f) Construction, maintenance, and operation of public hatchery facilities.

(g) Purchase and maintain materials, supplies, or equipment for either the department's ownership and use or the department's use in the normal performance of the department's responsibilities.

(h) Predator control actions for the benefit of fish or wildlife following certification in writing by the department that the proposed actions will significantly benefit a particular wildlife species.

(i) Scientific fish and wildlife research conducted by institutions of higher learning, qualified researchers, or governmental agencies, if approved by the department.

(j) Reasonable administrative costs, excluding the costs of audits required by Section 13104, for secretarial service, travel, and postage by the county fish and wildlife commission when authorized by the county board of supervisors. For purposes of this subdivision, "reasonable cost" means an amount which does not exceed 15 percent of the average amount received by the fund during the previous three-year period, or ten thousand dollars (\$10,000) annually, whichever is greater, excluding any funds carried over from a previous fiscal year.

(k) Contributions to a secret witness program for the purpose of facilitating enforcement of this code and regulations adopted pursuant to this code.

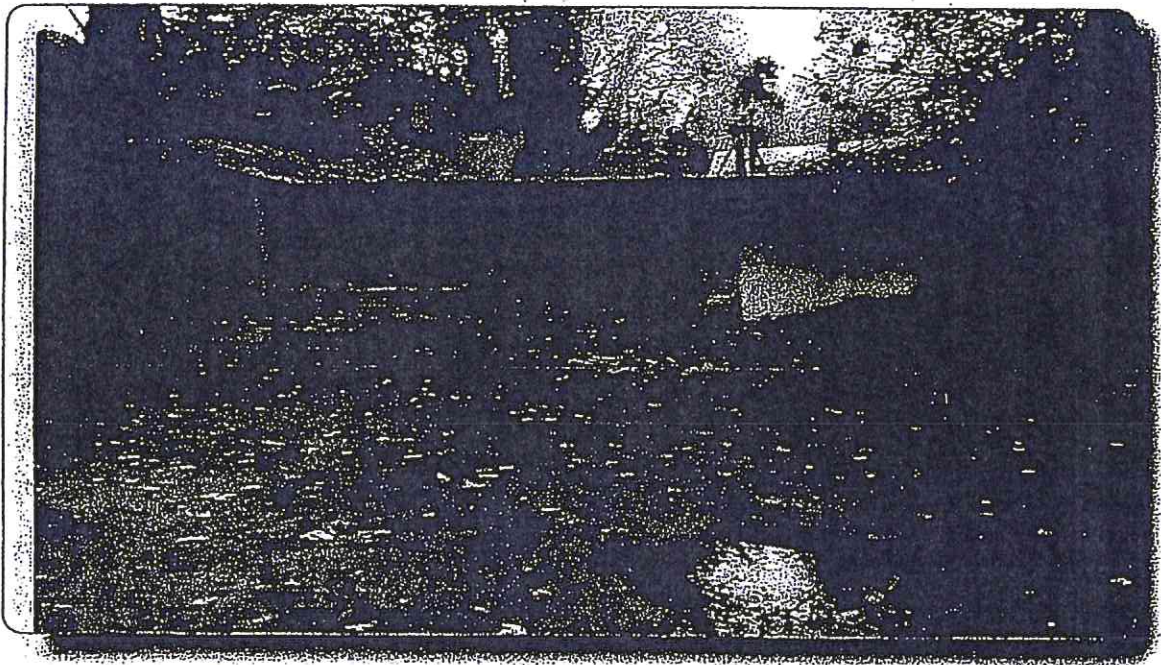
(l) Costs incurred by the district attorney or city attorney in investigating and prosecuting civil and criminal actions for violations of this code, as approved by the department.

(m) Other expenditures, approved by the department, for the purpose of protecting, conserving, propagating, and preserving fish and wildlife.

13104. The department may audit, or require the county to audit, expenditures by the county from its fish and wildlife propagation fund in order to determine compliance with this chapter. If, after reviewing the audit, the department determines that expenditures are not in compliance with this chapter, the department may require that all expenditures from the fund be temporarily suspended, or it may seek reimbursement of funds that the department determines, based on the audit, were expended improperly, or both.

SAN JOSE CREEK FISH PASSAGE IMPROVEMENT PROJECT

Feasibility Report



prepared for
Cachuma Resource Conservation District

prepared by



WATERWAYS
CONSULTING, INC.



March 20, 2015



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1 INTRODUCTION

Waterways Consulting, Inc. (Waterways) is working with the Cachuma Resource Conservation District to develop designs for the replacement of two low water crossings and the removal of an abandoned concrete dam on San Jose Creek in Santa Barbara County (Figure 1). San Jose Creek is listed as a high priority creek for steelhead recovery as noted in the South Santa Barbara Steelhead Assessment Report (Stoeker, 2002). Significant fish passage improvements have been implemented in recent years to the lower portions of San Jose Creek. These improvements have removed fish passage impediments and improved access for steelhead to the middle reaches of San Jose Creek. This memorandum has been prepared to discuss the feasibility of providing improved fish passage conditions at three locations in the upper portion of San Jose Creek.

2 OVERVIEW OF WORK PERFORMED

Tasks performed to support design of concept level alternatives and selection of a preferred alternative includes the following:

- Review of background data;
- Topographic mapping;
- Hydrologic and hydraulic modeling;
- On site meetings with the landowner and RCD to review project goals and objectives and receive initial design input;
- Development of concept level design alternatives for each of the two sites;
- Development of preliminary engineer's construction cost estimates for each alternative;

3 EXISTING CONDITIONS

The projects are located on two contiguous avocado ranches owned by the Bosio family. The Bosio family has owned and operated portions of the Ranch for five generations and plans on staying in agriculture and avocado production into the future. The Ranch has a main access road that runs north along the eastern portion of San Jose Creek and utilizes two stream crossing to provide access to a residence and orchards on the west side of the creek.

Ranch1 contains the downstream project site and is approximately 200 acres and has been in the family for five generations. The downstream project site is located on a parcel of land that was added to the Bosio family original ranch in the 1970's. The concrete diversion dam was constructed around 1940 and was in continuous use until the late 1960's. The concrete structure consists of a spillway measuring approximately 50 feet long (streamwise) and a 4 foot tall concrete dam with a 5.5 feet wide slot that was used to install flashboards when diverting water from the creek. The spillway has created a hydraulic drop of approximately 10 feet as measured from the pool water surface to the top of the crossing (Sheet C6, Appendix B). The structure is in poor condition with a large portion of the concrete spillway undercut and a portion of the spillway broken and lying in the downstream pool. The hydraulic drop, combined with the shallow flow depths and high velocities at the spillway



make the site an extremely difficult obstacle to upstream migrating salmonids. An upstream migration severity of extremely high to impassable was applied to the concrete structure in the South Santa Barbara Steelhead Assessment Report (Stoeker, 2002). A culvert crossing located approximately 150 feet upstream of the concrete dam is used to access approximately 40 acres of avocados on the west side of the creek. The culverted crossing is undersized and is regularly overtopped, as evidenced by a cable attached to the culvert to keep it from washing downstream.

Ranch 2 contains the upstream site and consists of 270 acres and was purchased by the Bosio family in 1988. The upper crossing is located at a concrete ford and provides access to a residence and approximately 115 acres of orchard on the west side of the creek. The concrete crossing has resulted in a hydraulic drop of approximately 6.5 feet (measured from the pool water surface to the top of the crossing) as well as shallow flow depths and high water velocities over the structure (Sheet C3, Appendix B). During migration flows, the excessive jump height and high water velocities associated with the steep apron likely present impassable conditions for all upstream steelhead migration (Stoeker, 2002). Appendix A includes photographs of each of the project sites.

In the vicinity of the project sites, San Jose Creek is relatively incised within a small canyon and exhibits minimal sinuosity. There are a few locations that have low floodplain benches between the two project sites. These areas are located upstream of the concrete dam and also just upstream of a bedrock outcropping (Sta. 13+00) which likely provides grade control in the channel. Downstream of the concrete dam the channel is extremely incised and easily contains the 100-year flood event.

Channel bed material observed in the project reach is generally dominated by cobbles in the 6 to 12 inch size class with boulders up to 4 and 5 feet in diameter scattered throughout the channel.

The average profile grade through the project reach was estimated to be between 1.6% and 1.8% and was determined by drawing a best-fit line through the riffle crests outside of the area where the bed elevations appeared to have been influenced by the presence of the crossings (Sheets C3 and C6, Appendix B). The low gradient areas immediately upstream of the crossings indicate aggradation resulting from the channel constrictions caused by the concrete dam and the concrete crossing.

4 ALTERNATIVES ANALYSIS

In November of 2014 Waterways visited the site to perform topographic mapping and subsequently prepared concept level alternatives for site improvements. Each of the proposed alternatives would meet standard fish passage design criteria established by California Department of Fish and Wildlife (CDFW). The restored channels would be designed based on the "Hydraulic Design" approach, as outlined in the "California Salmonid Stream Habitat Restoration Manual" (CDFW, 2009). A "Stream Simulation" design approach

alternative was considered but deemed infeasible due to the long disturbance footprint and increased cost that would be required to put the channel back to the natural grade of 1.8%.

4.1 UPSTREAM SITE

Alternatives considered at the upstream site consisted of replacing the concrete ford with either a bridge or a bottomless arched culvert and reconstructing the channel profile to smoothly transition between upstream and downstream conditions (Sheets C2-C3, Appendix B). A 70 foot single-span bridge would convey the 100-year flood with 2 feet of freeboard as necessary to meet Santa Barbara County Flood Control District requirements. The culvert alternative was evaluated and eliminated because of high costs associated with the skewed alignment and reduced flood conveyance benefits relative to the bridge alternative. Roughened channel profile grades for this alternative ranged between 3.3% and 4% (Sheet C3, Appendix B). Channel grades less than 3.3% were not developed for the alternative because they require a significantly longer constructed channel to conform to the existing channel grade. Channel grades steeper than 4% are generally not accepted by CDFW for the "Hydraulic Design" approach. The roughened channel profile would include a weir and pool structure at approximately the mid-point of the channel to provide additional channel stability and a place for fish to hide and rest.

4.2 DOWNSTREAM SITE

Alternatives considered at the downstream site consisted of removing the concrete dam structure and replacing the culverted crossing with a bridge or bottomless arched culvert. Removal of the culvert without replacing with another crossing was not considered because the culverted crossing provides the only access to the approximately 40 acres of orchard on the west side of the creek. The crossing structure would be relocated to an alternative alignment to take advantage of increased flood capacity where the channel is more deeply entrenched (Sheets C4-C6, Appendix B). A 50 foot single-span bridge would conform to the top of bank and convey the 100-year flood with 5 feet of freeboard (Sheet C4, Appendix B). A 48 foot single-span bottomless arched culvert would convey the 100-year flood without exceeding the top of culvert arch (soffit).

A vented ford and a lower bridge (below 100-year water surface) were considered, but the landowner would not accept them and the cost savings did not warrant the increased risk and higher maintenance costs associated with structural damage and the potential for debris or sediment accumulations during high flood events. Roughened channel grades considered for the reconstructed channel ranged from 3.2% to 4%. A grade of 3.2% would require the reconstructed channel to be approximately 200 feet longer than if the channel was reconstructed at a grade of 4% (Sheet C6, Appendix B). The roughened channel profile would include two weir and pool structures to provide additional channel stability and a place for fish to hide and rest.

5 HYDROLOGY

5.1 FISH PASSAGE HYDROLOGY

The California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) prescribe upper and lower fish passage design flows for juvenile and adult salmonids. Where flow duration data is available or can be synthesized, the upper fish passage design flow is equal to the 1% annual exceedance flow for adult salmonids and the 10% annual exceedance for juveniles. The lower fish passage design flow for adult salmonids is equal to the greater of either the 50% annual exceedance or 3 cfs. For juveniles, it is the greater of either the 95% annual exceedance or 1 cfs (NMFS 2001).

Flow duration data for the site were developed from mean daily flows recorded at USGS gaging station 11120500 (San Jose Creek near Goleta). Exceedance flows calculated for the gage were normalized by drainage area to estimate the fish passage flows at the project site (Table 1).

Table 1. Summary of Fish Passage Flows (cfs)			
Design Flow / Species and Life Stage	Percent Exceedance	USGS Gage (11120500) (Drainage Area =5.51 sq.mi.)	Project Site (Drainage Area = 5.4 sq.mi.)
Low Flow Juvenile Salmonids	95%	0	1*
Low Flow Adult Anadromous Salmonids	50%	0.3	3*
High Flow Juvenile Salmonids	10%	2.8	2.7
High Flow Juvenile Salmonids	10% (2-yr)	N.A.	38**
High Flow Adult Anadromous Salmonids	1%	69	67.6
High Flow Adult Anadromous Salmonids	50% (2-yr)	N.A.	190**

* The alternative minimum design flows of 3 cfs and 1 cfs were adopted for the adult anadromous salmonid and juvenile salmonid fish passage analyses.

** Alternative high fish passage flows requested by CDFW for use in comparing of depth and velocity within the unaffected existing stream reaches and the proposed channel configurations.

5.2 PEAK FLOW HYDROLOGY

Peak flood discharges were developed from statistical analysis of annual peak flows recorded at USGS gaging station 11120500 (San Jose Creek near Goleta). This gage has recorded 73 years of peak flow data, from 1941 to 2014. Our analysis of the gage data used procedures outlined in Bulletin 17-B (USGS 1982) and then normalized the results by drainage area to

provide estimates for the project site (Table 2). Detailed calculations are included in Appendix B.

Table 2. Summary of Peak Flood Discharges (cfs)		
Recurrence Interval	USGS Gage (11120500)	Project Site
1.5-year	217	212
2-year	386	379
10-year	1,621	1,589
25-year	2,263	2,218
50-year	3,176	3,112
100-year	3,904	3,826

6 HYDRAULICS

6.1 FISH PASSAGE HYDRAULICS

NMFS and CDFW provide guidelines prescribing minimum water depths and maximum velocities for fish passage (Table 3). The design criteria for depth and velocity should be satisfied through the full range of fish passage design flows.

Table 3. Fish Passage Design Criteria		
Species and Life stage	Minimum Flow Depth (ft)	Maximum Water Velocity (ft/s)
Adult Anadromous Salmonids	1	4 ¹
Juvenile Salmonids	0.5	1

¹ 4 ft/s for culverts between 100 and 200 feet in length

Detailed fish passage hydraulic calculations were not prepared at this level of design, due to the fact that numerous roughened channels have been recently designed and constructed under similar conditions (geometry and hydrology) and these were able to meet passage performance criteria established by NMFS and CDFW. We are confident that the proposed projects will meet the standard design criteria.

6.2 PEAK FLOW HYDRAULICS

Peak flood hydraulic modeling was conducted using HEC-RAS 4.1 river analysis software, developed by the United States Army Corps of Engineers (USACE). The existing conditions hydraulic model was developed using topographic mapping and cross section surveys performed by Waterways in November 2014. The topographic mapping, hydraulic model, and

resulting water surface elevations are based on an assumed vertical datum with an elevation of 180.70 established at control point #201 shown on the Drawings in Appendix B.

A total of forty (40) cross sections were used to develop the hydraulic models. The cross sections extend along approximately 3,100 feet of San Jose Creek, beginning about 400 feet downstream of the existing concrete dam and extending to approximately 300 feet upstream of the concrete ford. Cross sections were located at channel constrictions and expansions, changes in geometry, and immediately upstream and downstream of the crossing location.

Roughness values (Manning's n) were chosen from field-based observations of the channel and floodplains. Selections were based on local conditions such as channel substrate, vegetation density and over-bank conditions. Roughness values for the existing channel were set to 0.045 for all locations except where existing concrete is present which was set to 0.02. Roughness values for the floodplain areas were set to 0.1.

The downstream boundary condition was set using the normal depth method, with the energy slope equal to 0.006, which roughly matches the channel slope at the downstream end of the modeled reach.

Results of the hydraulic modeling were used to assess hydraulic characteristics (shear, velocity, depth) of the existing and preferred alternatives. Results of the peak flow modeling are described below and depicted in Appendix D.

6.2.1 Peak Flow Hydraulic Results

100-year flood elevations are generally contained within the channel and low floodplain terraces. The 100-year water surface profile (Figure 2) depicts a 13-foot drop over the concrete dam structure and a five foot drop over the concrete crossing structure, resulting in high shear and velocity and localized scour pools. The 100-year water surface elevation profile between the two sites is relatively uniform with a depth of approximately 9.5 feet.

Channel velocities for a bankfull or 1.5-year flood event generally range from between 5 ft/sec and 7 ft/sec through the modeled channel reach (Figure 3). The proposed projects result in slight increases to the 1.5-year channel velocities upstream of the proposed crossings where the proposed channel profile grades are steeper than existing conditions.

Channel shear values calculated for existing and proposed conditions generally range between 1 lb/sqft and 2.5 lb/sqft for the 1.5-year flood event and between 2 and 8 lb/sqft for the 100-year event (Figure 4). These values would suggest that particle sizes in the 6 to 12 inch size class would be mobilized during the 1.5-year flood event. Larger rocks observed scattered throughout the channel would not be mobilized until a 10-year event or greater.

The proposed bridges have been elevated above the calculated 100-year water surface elevation by a minimum of 2 feet, as necessary to meet Santa Barbara County Flood Control District requirements that a bridge pass the 100-year flood with two feet of freeboard. Results of the peak flow modeling are depicted in Appendix D.

7 SUMMARY OF PROPOSED ALTERNATIVES

Two alternative design scenarios have been analyzed at each of the sites to improve fish passage conditions. Each of the alternatives would meet fish passage objectives, but vary in the manner and in the degree to which they address other concerns (e.g., flood conveyance, construction cost, maintenance requirements). Tables 4 and 5 provide a summary of some key criteria that should be considered during selection of the preferred alternatives.

Table 4. Summary of Project Alternatives (Upstream Site)

Alternative	Construction Cost	Design, Permitting, and Construction Support Costs	Approx Flood Capacity	Long Term Maintenance Requirement	Temporary and Permanent Impacts to Site	Meets Fish Passage Criteria
Existing Conditions	N.A.	N.A.	N.A.	Moderate	Low	No
Bridge and 3.3% Channel	\$890,000 - \$1,040,000	\$140,000	(100-year + Freeboard)	Very Low	Moderate	Yes
Bridge and 4% Channel	\$860,000 - \$1,00,000	\$140,000	(100-year + Freeboard)	Very Low	Moderate	Yes

Table 5. Summary of Project Alternatives (Downstream Site)

Alternative	Construction Cost	Design, Permitting, and Construction Support Costs	Approx Flood Capacity	Long Term Maintenance Requirement	Temporary and Permanent Impacts to Site	Meets Fish Passage Criteria
Existing Conditions	N.A.	N.A.	N.A.	High	None	No
Bridge and 4% Channel	\$900,000 - \$1,050,000*	\$140,000	(100-year + Freeboard)	Very Low	Moderate	Yes
Bridge and 3.2% Channel	\$990,000 - \$1,140,000	\$140,000	(100-year + Freeboard)	Very Low	Moderate-High	Yes
Bottomless Arched Culvert and 4% Channel	\$820,000 - \$970,000*	\$140,000	(100-year)	Low	Moderate	Yes
Bottomless Arched Culvert and 3.2% Channel	\$910,000 - \$1,060,000	\$140,000	(100-year)	Low	Moderate-High	Yes

Preliminary construction cost estimates were developed for each of the alternatives. These costs should be considered approximate and used only as a means of evaluating the project costs relative to one another. Actual costs may vary considerably, given the significant number of unknowns at the concept level and the unique nature of the work.

8 PREFERRED PROJECT ALTERNATIVE

Our recommended approach is to improve both sites with free-span bridges to provide a stable and safe access and improved fish passage with the greatest flood conveyance and least maintenance requirements. At the upstream site we recommend that the channel profile be constructed at a gradient of 3.3% which would provide a greater improvement to fish passage conditions and stream stability relative to the alternative 4% gradient. At the downstream site we recommend that the channel profile be constructed at 4% instead of the alternative 3.2% in order to reduce the length of reconstructed channel, construction cost, and impacts to riparian vegetation.

The reconstructed channels would be constructed with imported and salvaged rock designed to remain stable in a 100-year flood event. Rock gradations designed in these reconstructed reaches would be larger than the material observed in the adjacent channels. The larger rock sizes used in the reconstructed channel reaches would trap and store smaller sediment sizes and would seal the bed to prevent flows from going subsurface. The improvements are not anticipated to have long term effects to the channel cover or instream complexity of the existing channel reaches upstream, between, or downstream of the proposed project sites.

The reconstructed channels may adjust over time which will provide a smooth transition from the design grades to the existing channel grades at the upstream portions of the reconstructed channel reaches. Small channel adjustments upstream of the constructed reaches may cause minor localized bank erosion, but would not significantly affect the existing bank erosion along the creek banks. Bridge abutments would be protected with rock slope protection and located below the channel invert to provide a factor of safety against failure due to scour or migration of the channel.

Channel improvements at the downstream site would reduce bank erosion and channel incision occurring at the downstream end of the concrete spillway. Permanent removal of the culvert crossing and fill prism would eliminate the cycle of aggradation and sediment release to the channel due to the constant washout and rebuilding of the crossing after moderate storm events. These improvements would help to stabilize the creek and provide favorable conditions for additional riparian vegetation to become established.

Riparian vegetation removed during construction will be replaced with a mix of container plants and live poles. The plantings and live poles would be spread throughout the reconstructed reaches providing additional cover over the long term. A large number of non-native eucalyptus trees will be removed at the upper site and replaced with native riparian species.

REFERENCES

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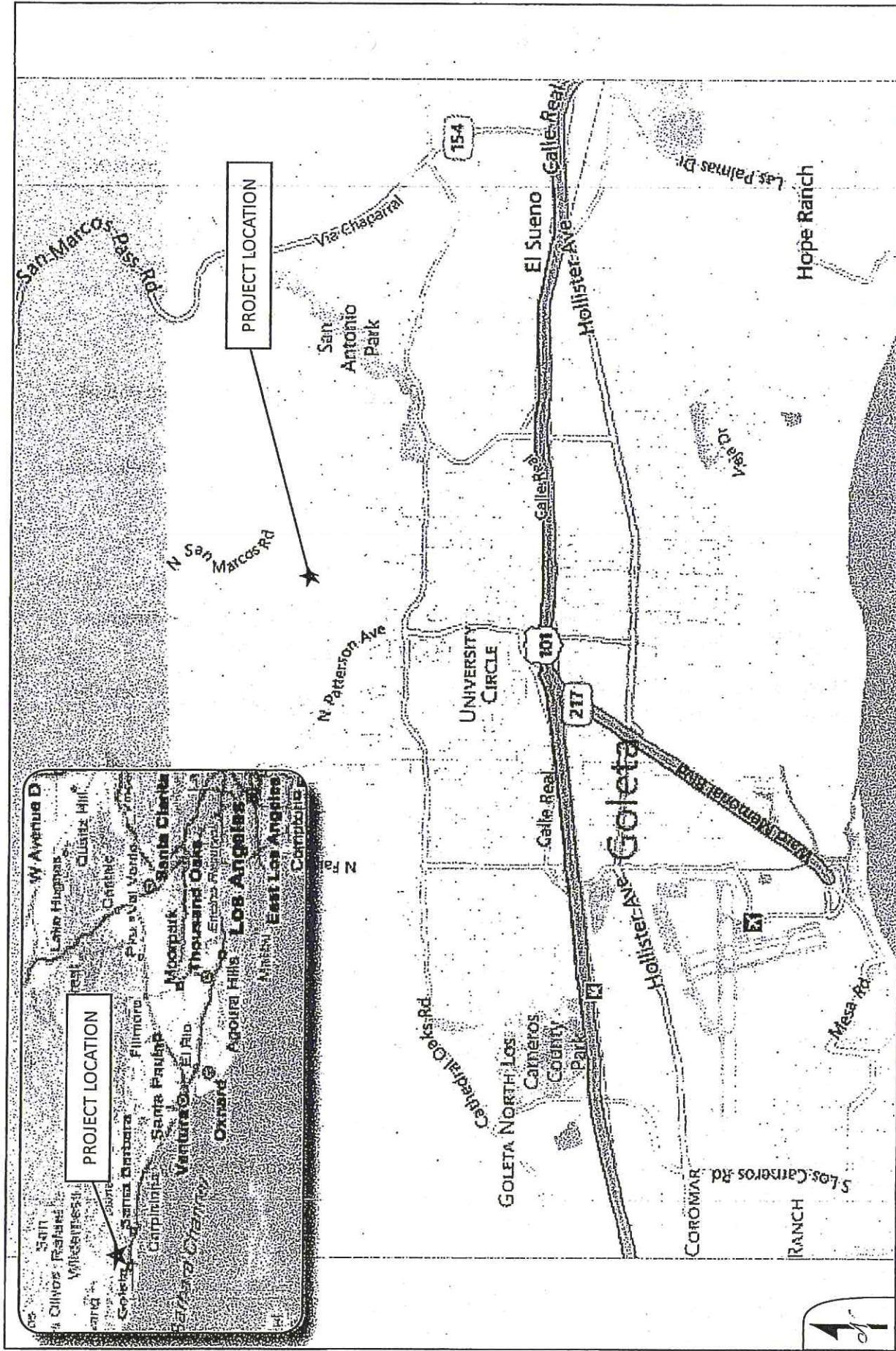
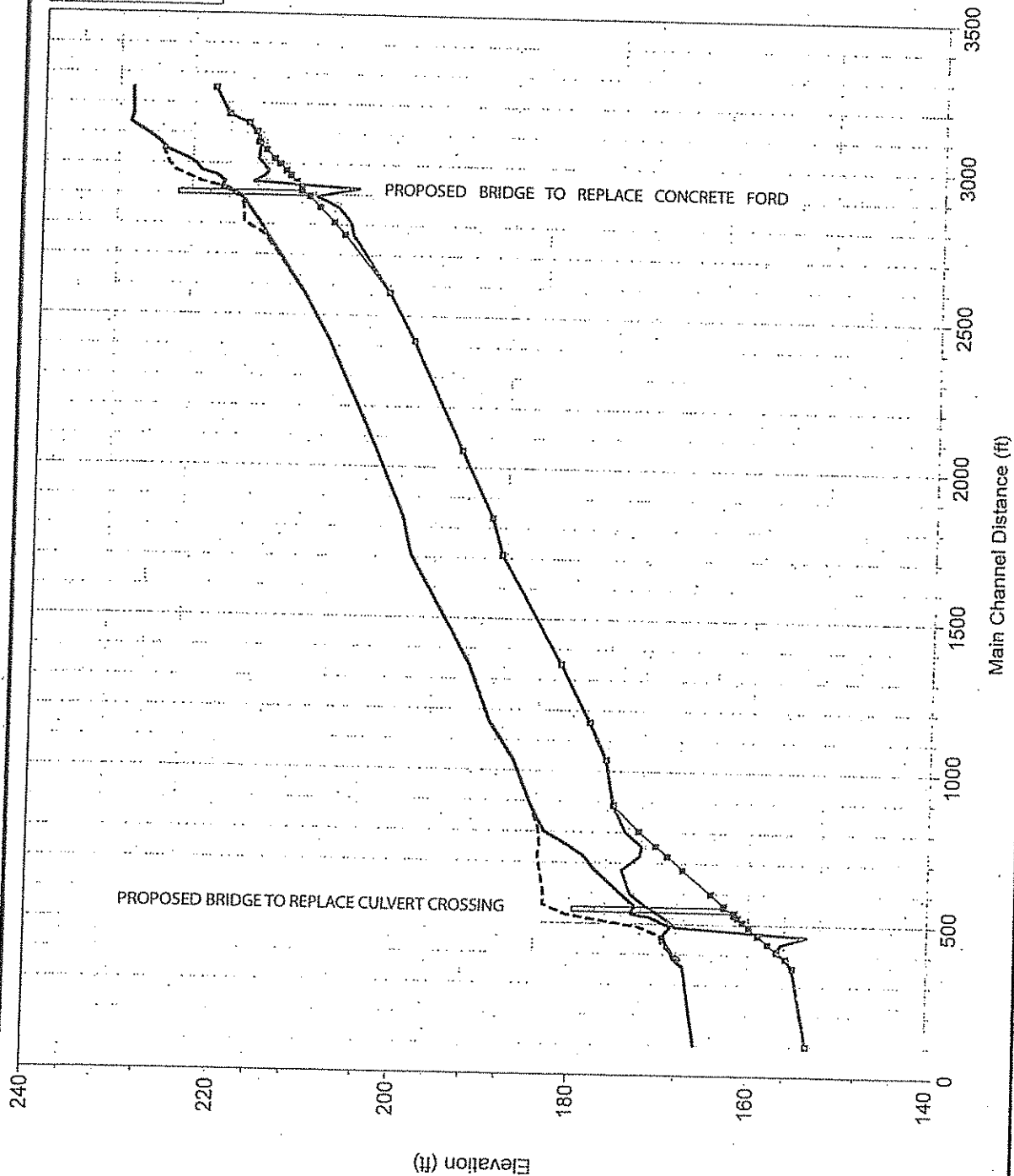


FIGURE 1
PROJECT LOCATION MAP

Legend	
—	Q100 - Proposed
- - -	Q100 - Existing
—	Finished Grade
—	Existing Ground



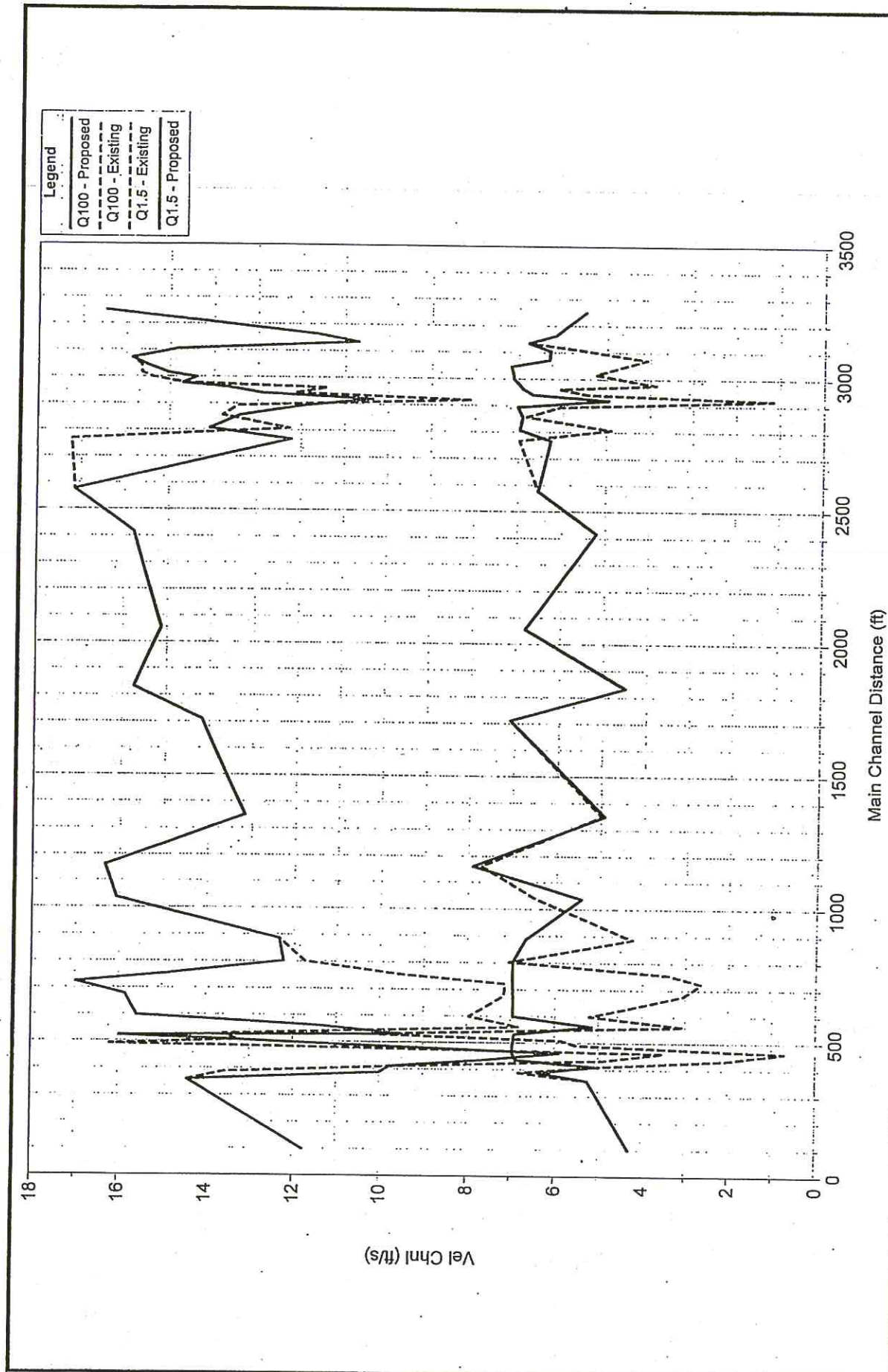
100-YR WATER SURFACE PROFILES FOR EXISTING AND PROPOSED CONDITIONS

FIGURE

2

SAN JOSE CREEK

FISH PASSAGE
IMPROVEMENT PROJECT



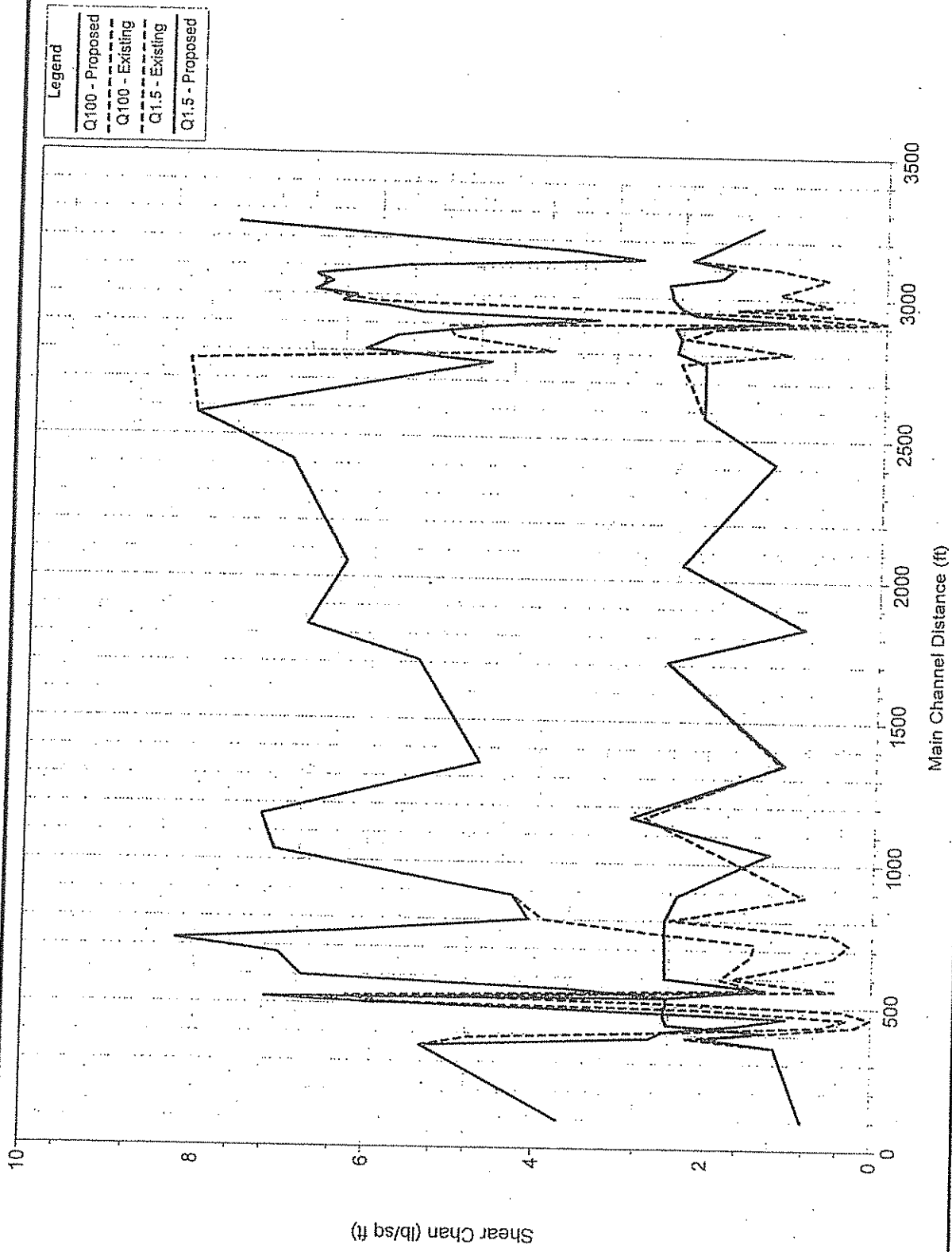
FIGURE

3

EXISTING AND PROPOSED CONDITIONS VELOCITY PROFILES FOR THE 1.5-YR AND 100-YR FLOOD EVENTS

SAN JOSE CREEK

FISH PASSAGE
IMPROVEMENT PROJECT



Legend

- Q100 - Proposed
- Q100 - Existing
- Q1.5 - Existing
- Q1.5 - Proposed

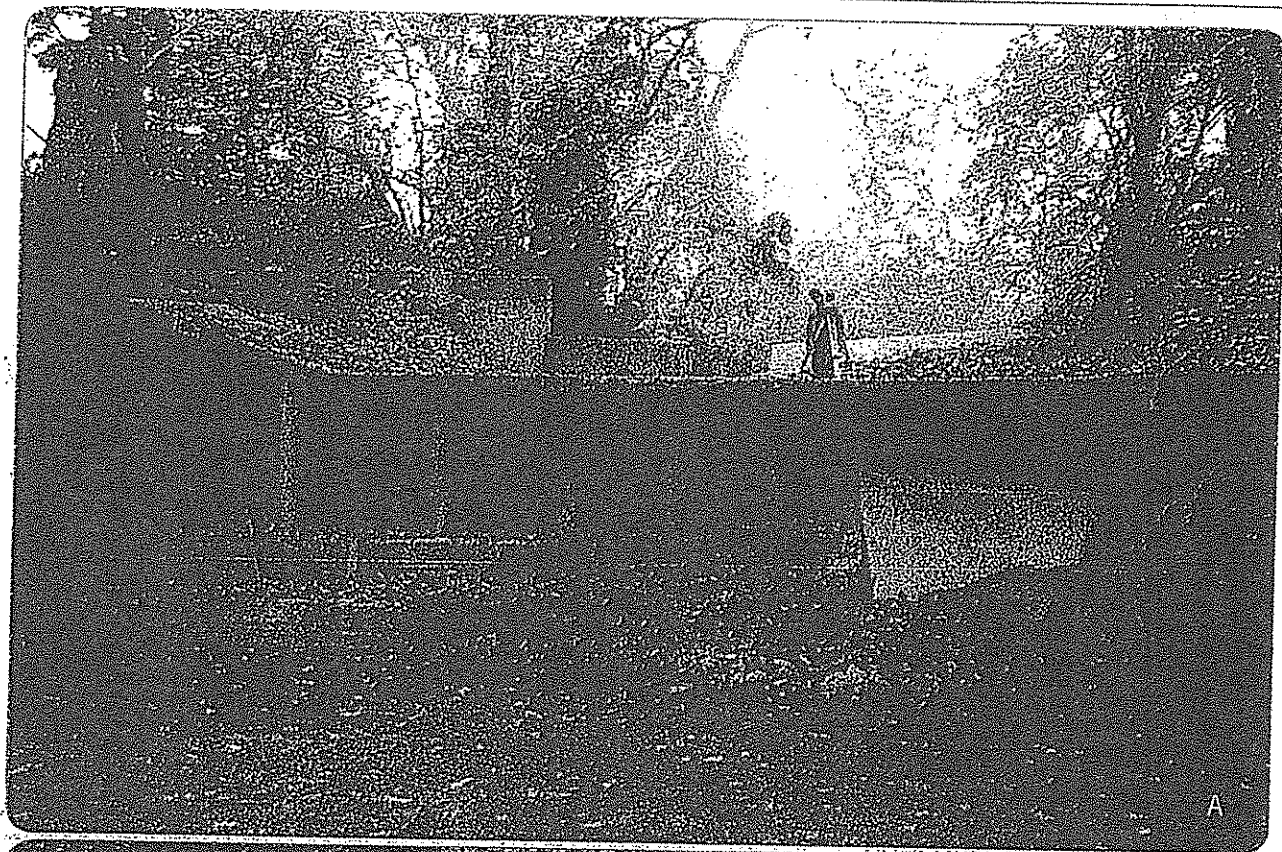
FIGURE
4

EXISTING AND PROPOSED CONDITIONS SHEAR PROFILES FOR THE 1.5-YR AND 100-YR FLOOD EVENTS

SAN JOSE CREEK
FISH PASSAGE
IMPROVEMENT PROJECT

Appendix A

Site Photographs

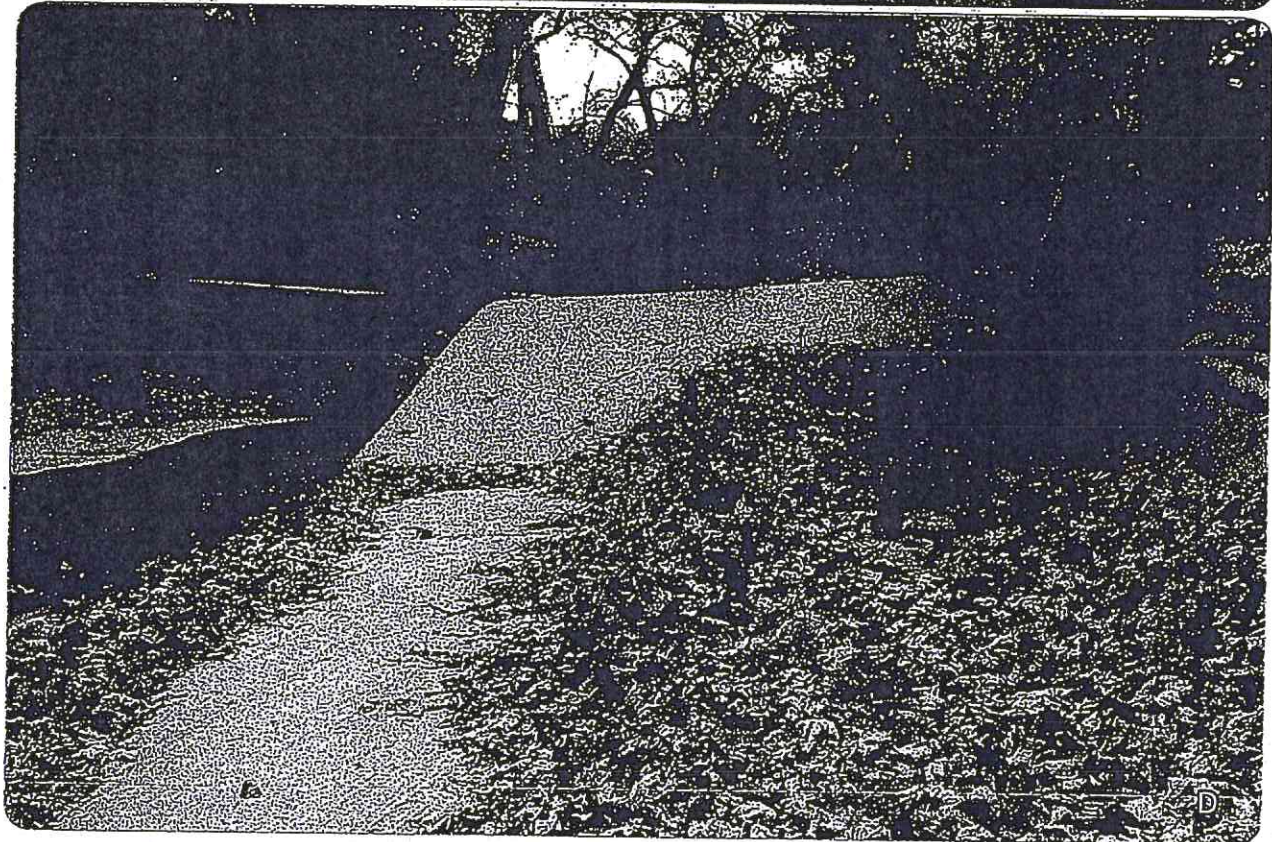
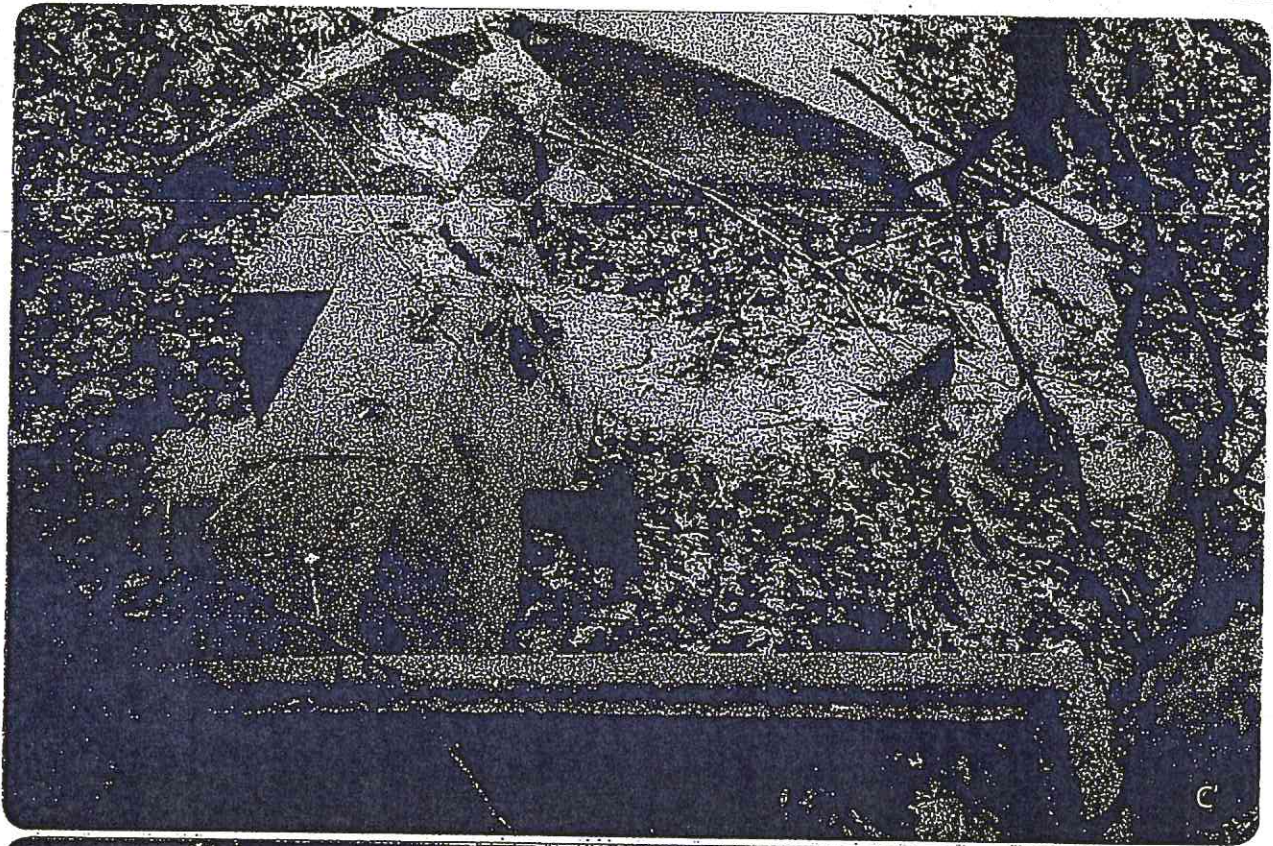


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CONSULTING, INC.

Santa Cruz, CA watways.com Portland, OR

PHOTO A: Photo of the downstream diversion dam spillway (looking upstream)

PHOTO B: Photo of the downstream diversion dam spillway (looking west)

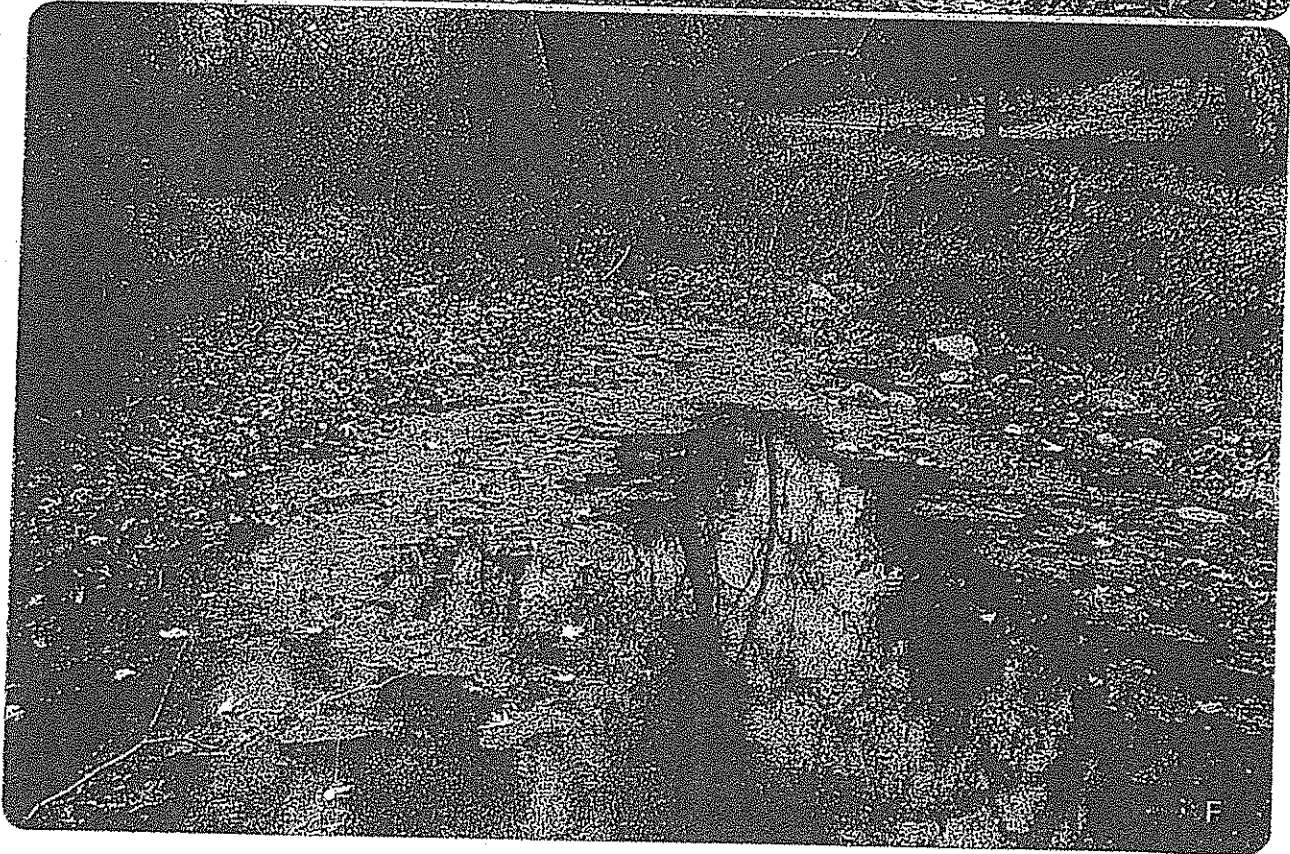


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CONSULTING, INC.

Santa Cruz, CA watways.com Portland, OR

PHOTO C: Photo of the downstream diversion dam (looking east)

PHOTO D: Photo of the downstream diversion dam (looking upstream)

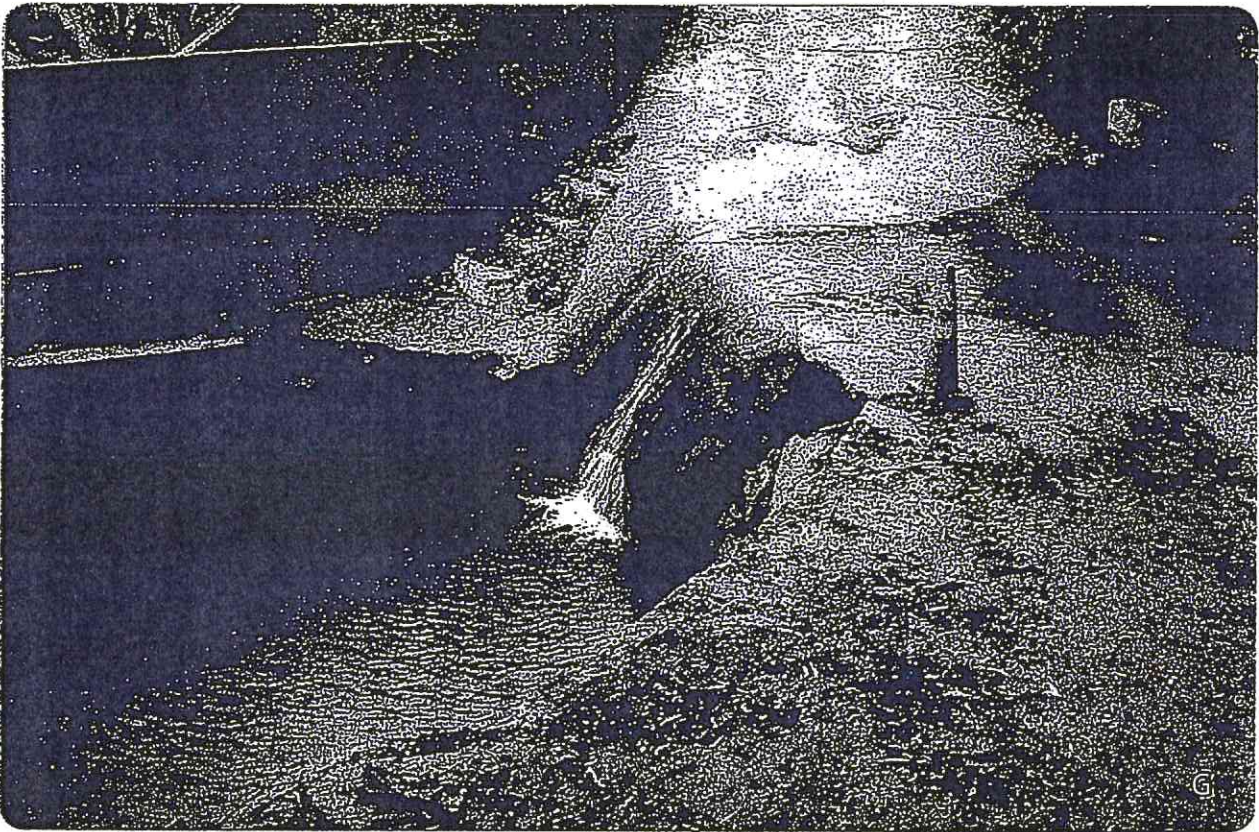


WATERWAYS
CONSULTING, INC.

Santa Cruz, CA watways.com Portland, OR

PHOTO E: Photo of the downstream site culvert crossing (looking east)

PHOTO F: Photo of the downstream site culvert crossing (looking downstream)



SAN JOSE CREEK FISH PASSAGE IMPROVEMENTS

CONCEPT LEVEL SUBMITTAL

WATERWAYS
CONSULTING INC.
509A SWIFT ST.
SANTA CRUZ, CA 95060
PH: (408) 211-9911 / FAX: (408) 211-9912
WWW.WATERWAYS.COM

DRAFT
NOT FOR CONSTRUCTION

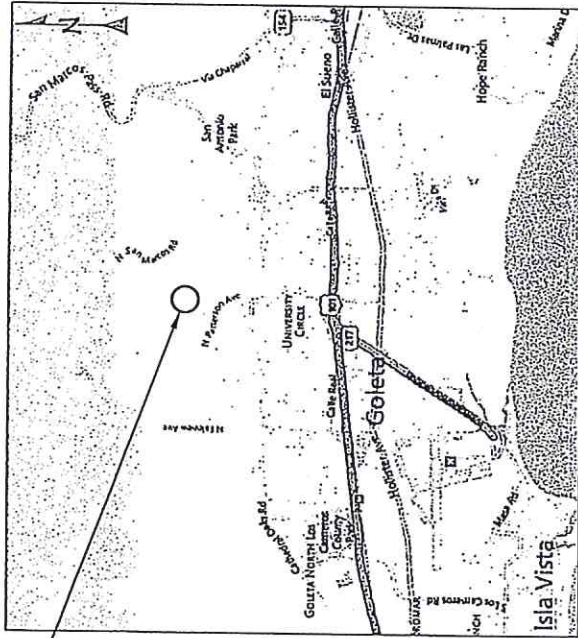
PREPARED AT THE REQUEST OF:
CACHUMA RESOURCE
CONSERVATION DISTRICT

COVER SHEET

SAN JOSE CREEK FISH
PASSAGE IMPROVEMENTS
CONCEPT LEVEL SUBMITTAL

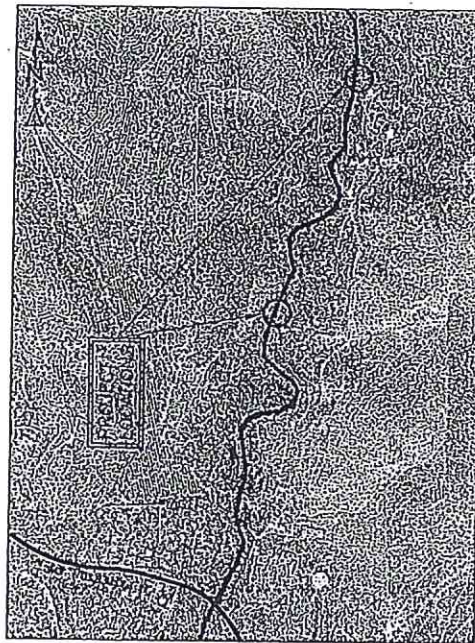
DESIGNED BY: D.B.C.
DRAWN BY: L.W.W.
CHECKED BY: J.L.O.
JOB NO.: 13-002
BAR IS ONE INCH ON
ORIGINAL DRAWING.
AUGUST 2014
REDACTED PHOTO

C1
1 OF 8



REGIONAL MAP
N.T.S. (INCH)

PROJECT
LOCATION



PROJECT OVERVIEW MAP
N.T.S. (INCH)

SHEET INDEX

- C1 COVER SHEET
- C2 UPSTREAM EXISTING CDD, PLAN AND CHANNEL PROFILE
- C3 UPSTREAM BRIDGE PLAN AND ROAD PROFILE
- C4 DOWNSTREAM EXISTING CDD, PLAN AND CHANNEL PROFILE
- C5 DOWNSTREAM BRIDGE PLAN AND ROAD PROFILE
- C6 DOWNSTREAM EXISTING CDD, PLAN AND CHANNEL PROFILE
- C7 DOWNSTREAM BRIDGE PLAN AND ROAD PROFILE
- C8 DOWNSTREAM TYPICAL SECTION AND PROFILES

GENERAL NOTES

1. TOPOGRAPHIC MAPPING WAS PERFORMED BY: SANTA CRUZ COUNTY ENGINEERING INC. SURVEY DATES: NOVEMBER 10-12, 2014.
2. ELEVATION DATUM: AN ASSUMED ELEVATION OF 180.20' WAS ESTABLISHED AT SURVEY CONTROL POINT #201 (REDUCED) SHOWN ON SHEET C6.
3. BASIS OF BEARING: BEARS OF BEARINGS BETWEEN POINTS #201 AND #4 IS 109°45'54.58" W, AS SHOWN ON SHEET C6.
4. CONTOUR INTERVAL IS ONE FOOT. ELEVATIONS AND DISTANCES SHOWN ARE IN DECIMAL FEET.
5. THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES ARE NOT SHOWN HEREON.
6. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE 2010 EDITION OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS, ISSUED BY THE DEPARTMENT OF TRANSPORTATION (HEREAFTER REFERRED TO AS "STANDARD SPECIFICATIONS").

ABBREVIATIONS

AVE.	AVERAGE
CONC.	CONCRETE
DIA.	DIAMETER
EG.	EXISTING
ELEV.	ELEVATION
FOOT	FOOT
FT	FEET
N	NEW
NOT TO SCALE	NOT TO SCALE
REL. COMP.	RELATIVE COMPACTION
SPK	STOCK PILE
SQ. FT.	SQUARE FOOT
TO BE DETERMINED	TO BE DETERMINED
TYP.	TYPICAL
WSE	WATER SURFACE ELEVATION
YR	YEAR

TABLE SERIES	
A	ALOE
B	BAY
C	EUCAL
D	PALM
E	OX
F	SYCA

PROJECT DESCRIPTION

THE PROJECT IS A FISH PASSAGE IMPROVEMENT PROJECT FOR THE REPAIR AND CONSTRUCTION OF AN EXISTING CONCRETE FISH PASSAGE STRUCTURE ON SAN JOSE CREEK IN SANTA BARBARA COUNTY, CALIFORNIA. THE PROJECT SITE IS LOCATED ON APRIL 153-350-028. CONSTRUCTION ACTIVITIES INCLUDE:

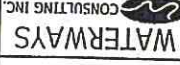
- REPAIR AND CONSTRUCTION OF CONCRETE STRUCTURES
- PLACEMENT OF BOLLARDS, COBBLE AND GRAVEL TO IMPROVE CHANNEL
- INSTALLATION OF CONCRETE FOOTINGS, ABUTMENTS, AND VERTICAL BRIDGES/CULVERTS

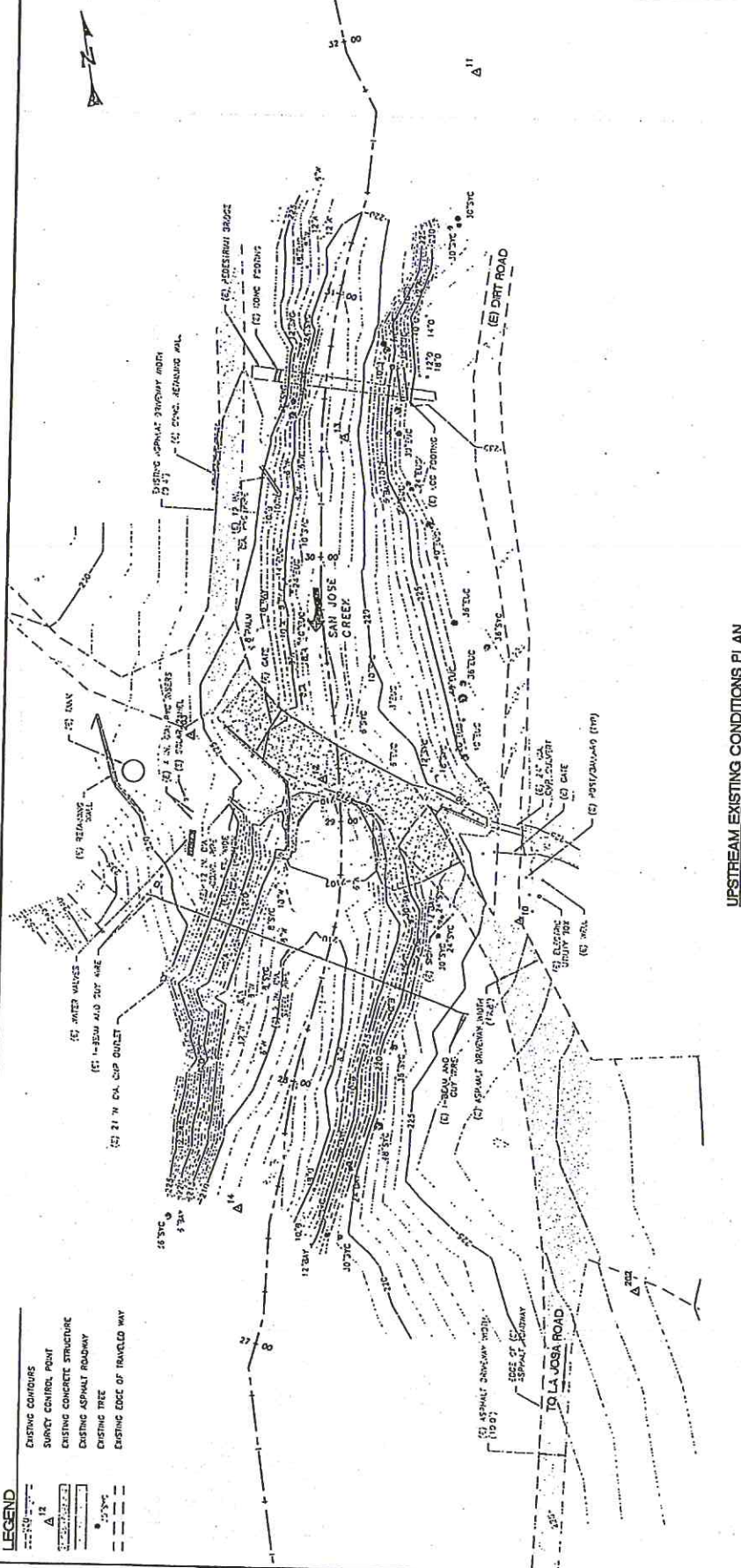
SECTION AND DETAIL CONVENTION

SECTION OR DETAIL IDENTIFICATION
(NUMBER OR LETTER)

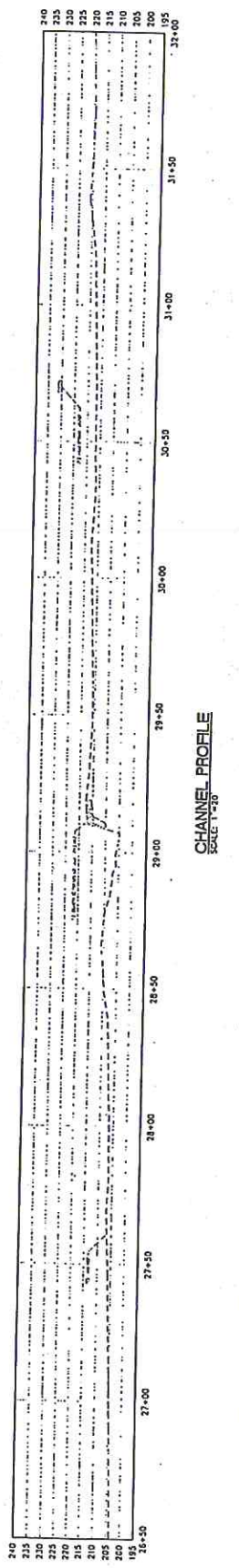
REFERENCE SHEET FROM WHICH
DETAIL OR SECTION IS TAKEN



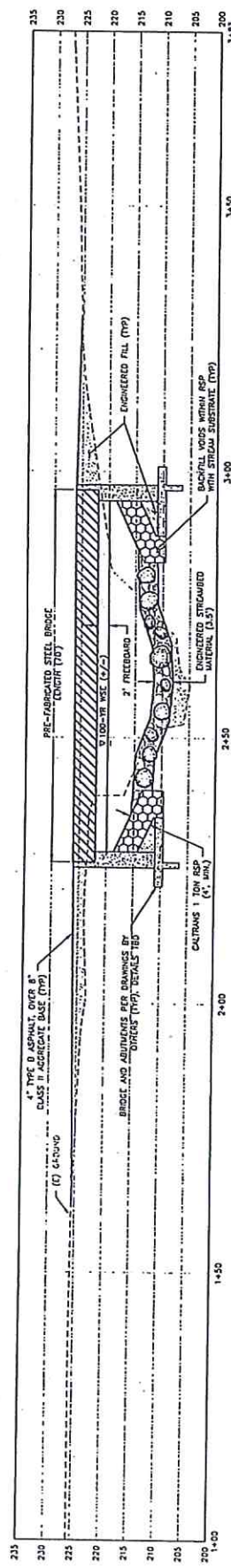
 WATERWAYS CONSULTING INC. 3054 SWIFT ST. SANTA CLAY, CA 95060 (916) 331-1711 / FAX (916) 331-1447 WWW.WATERWAYS.COM	DRAFT NOT FOR CONSTRUCTION	PREPARED AT THE REQUEST OF CACHUMA RESOURCE CONSERVATION DISTRICT	UPSTREAM EXISTING COND. PLAN AND CHANNEL PROFILE	SAN JOSE CREEK FISH PASSAGE IMPROVEMENTS CONCEPT LEVEL SUBMITTAL	DESIGNED BY: D.M.S. DRAWN BY: D.M.S. CHECKED BY: J.L.O. DATE: 12/15/15 JOB NO.: 13-012	D.M.S. IS THE DESIGNER OF RECORD FOR THIS PROJECT. ANY CHANGES TO THIS PROJECT MUST BE APPROVED BY THE DESIGNER OF RECORD.	C2 2 of 8
					SAN JOSE CREEK FISH PASSAGE IMPROVEMENTS CONCEPT LEVEL SUBMITTAL		

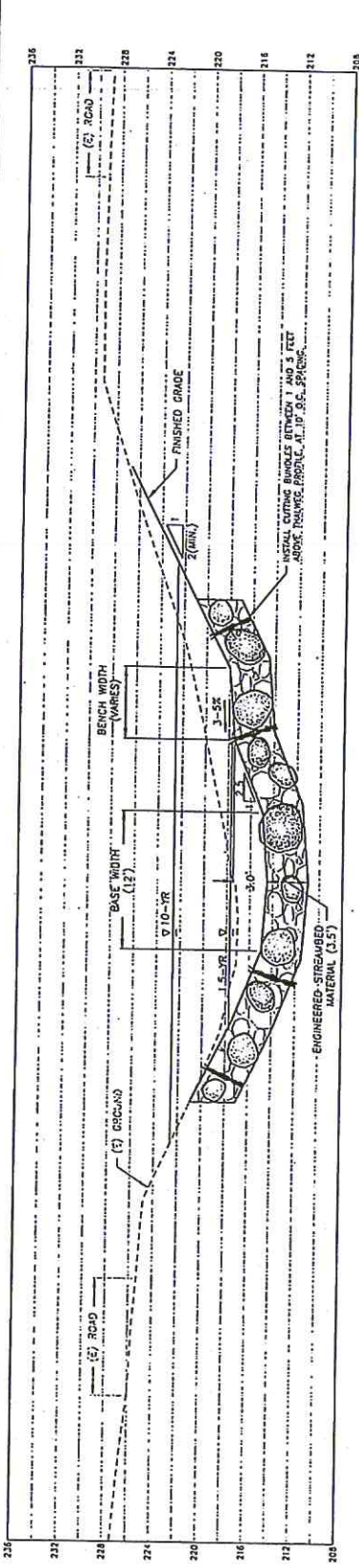


UPSTREAM EXISTING CONDITIONS PLAN
 SCALE 1" = 20'

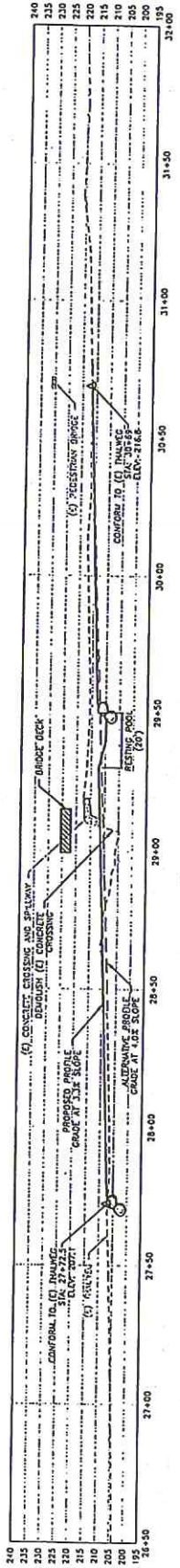


CHANNEL PROFILE
 SCALE 1" = 20'

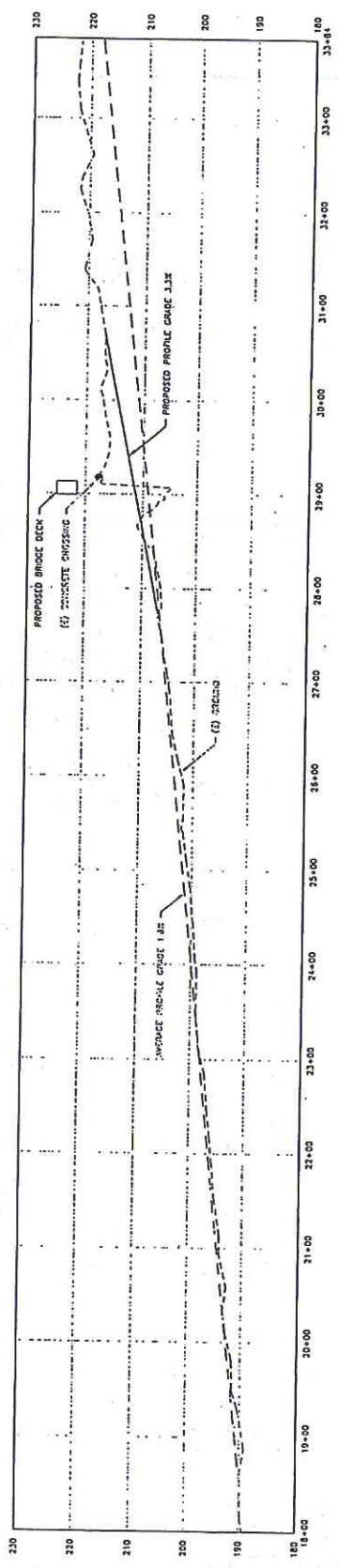




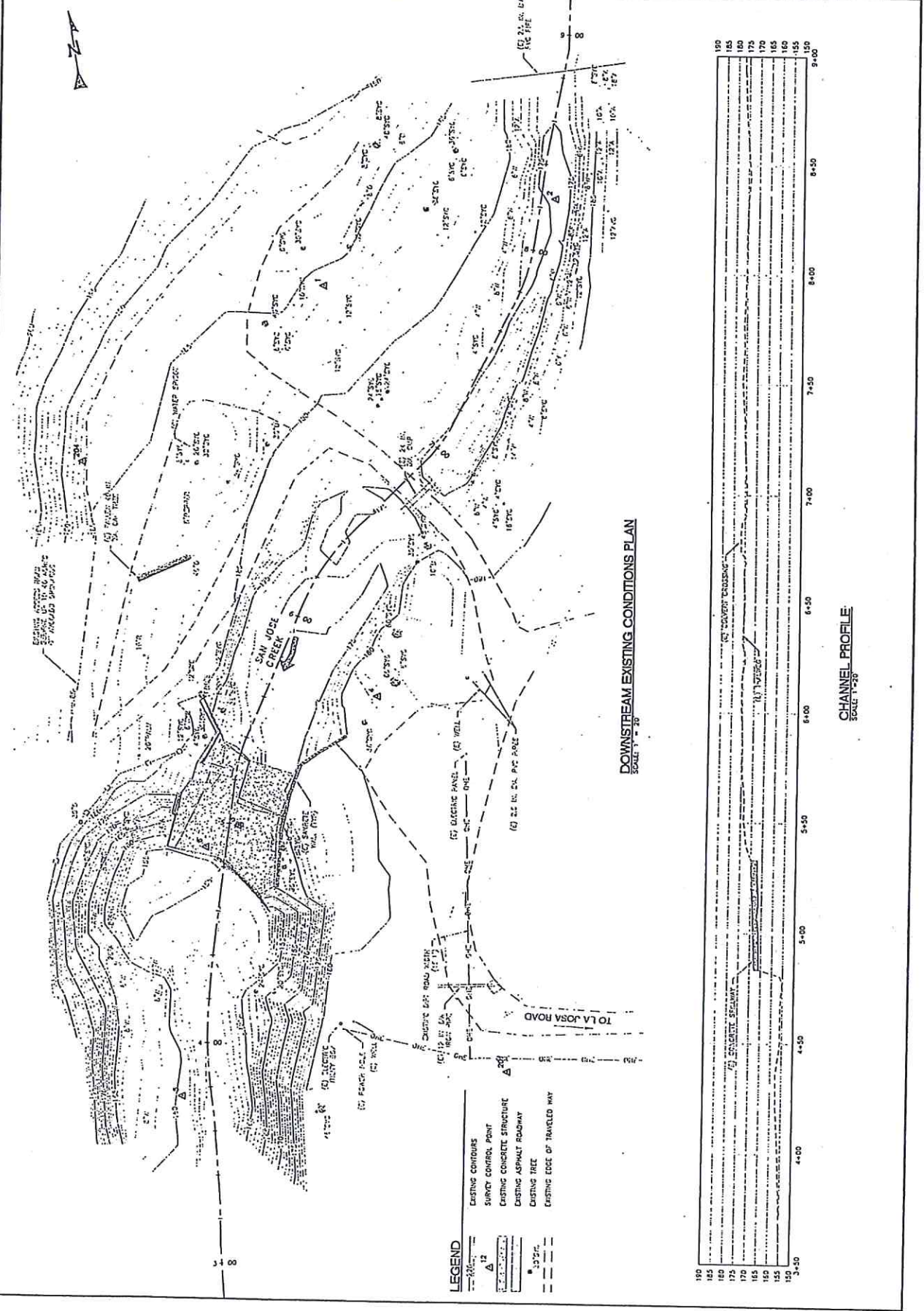
TYPICAL CHANNEL SECTION
SCALE 1"=5'



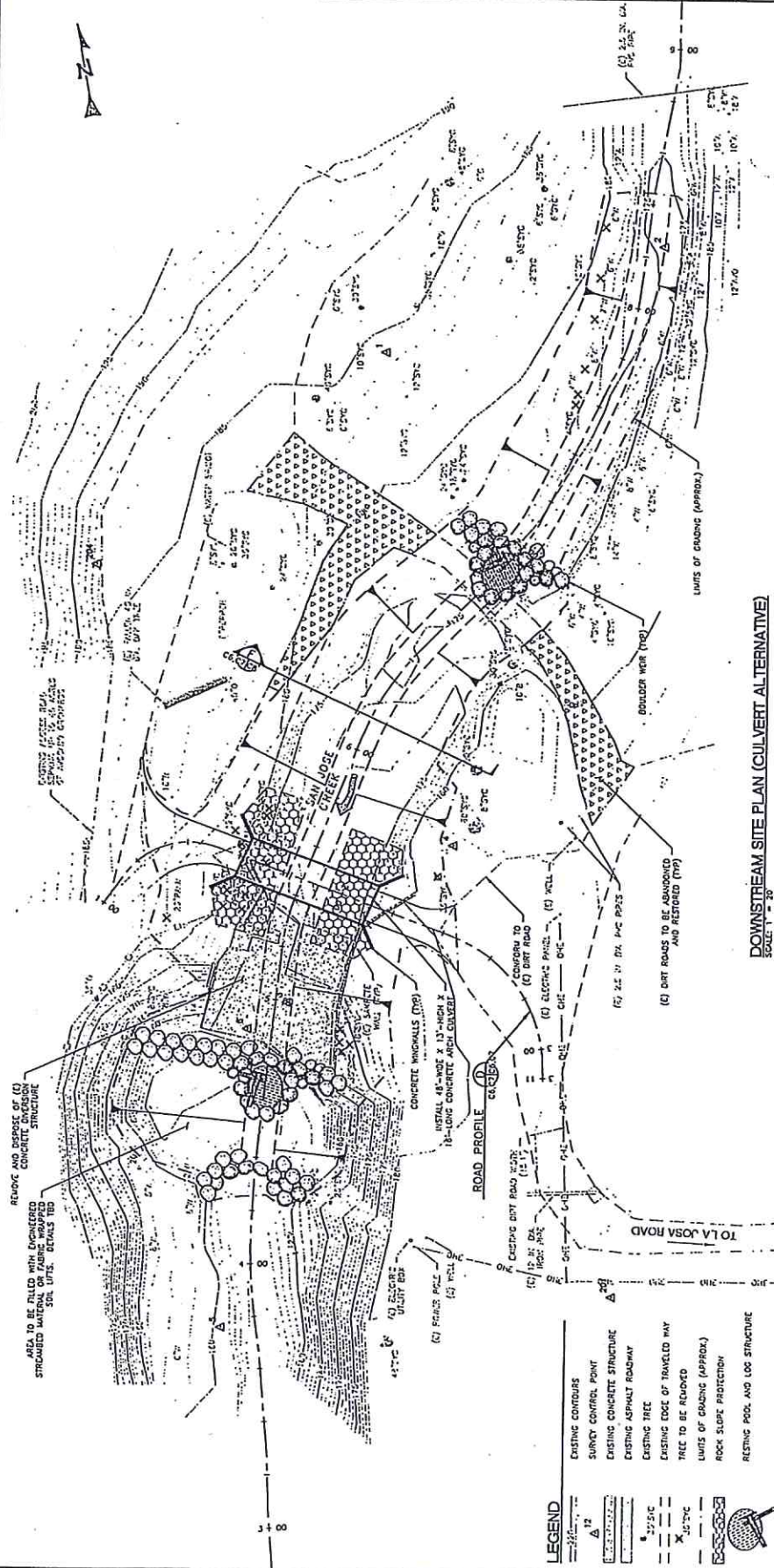
CHANNEL PROFILE AT SITE
SCALE 1"=20'

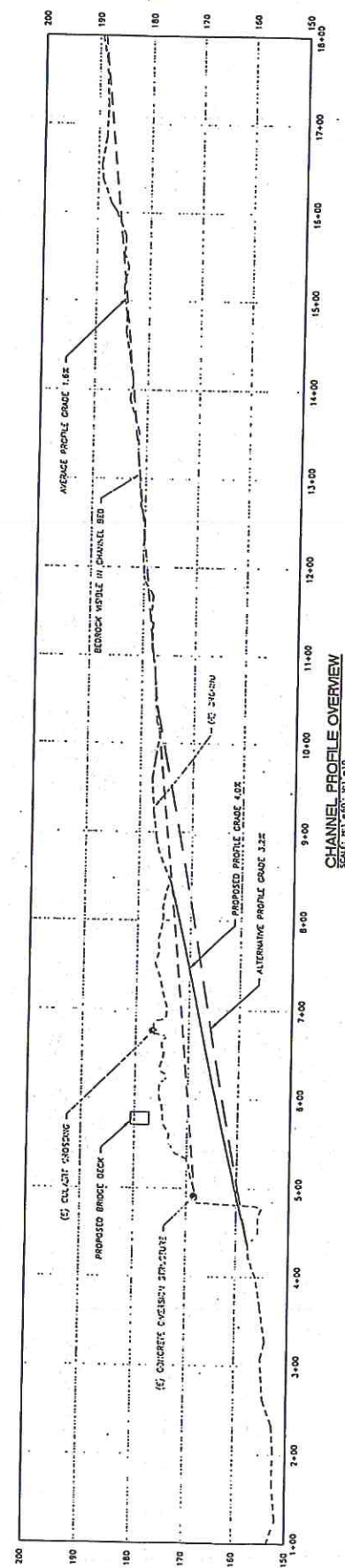


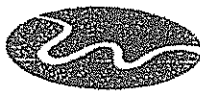
CHANNEL PROFILE OVERVIEW
SCALE 1"=40'-0"











Appendix B

Concept Level Designs
and Engineers Estimate of Construction Costs



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ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS
SAN JOSE CREEK FISH PASSAGE IMPROVEMENTS
UPSTREAM SITE - (BRIDGE AND 3.3% CHANNEL)
CONCEPT LEVEL SUBMITTAL

DATE: 1/7/2015

BY: B.M.S.

CHECKED: M.W.W.

Bid Item	Specifications Section	ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE	COST
1	01500	MOBILIZATION	1	LS	\$70,000	\$70,000
2	02050	DEMOLITION	1	LS	\$27,844	\$27,844
3	02110	CLEARING AND GRUBBING	1	LS	\$35,000	\$35,000
4	02140	DEWATERING	1	LS	\$15,000	\$15,000
5	02222	UNCLASSIFIED EXCAVATION	1,704	CY	\$20	\$34,086
6	02226	ENGINEERED FILL	1	LS	\$23,873	\$23,873
7	02270	IMPORT ENGINEERED STREAMBED MATERIAL	1,131	CY	\$75	\$84,800
8	02270	INSTALL ENGINEERED STREAMBED MATERIAL	1,615	CY	\$60	\$96,268
9	02270	IMPORT ROCK SLOPE PROTECTION	321	CY	\$75	\$24,063
10	02270	INSTALL ROCK SLOPE PROTECTION	321	CY	\$56.90	\$18,255
11	02270	IMPORT WEIR BOULDERS	161	CY	\$75	\$12,093
12	02270	INSTALL WEIR BOULDERS	1	LS	\$15,321	\$15,321
13	02272	LOG STRUCTURES	1	LS	\$2,800	\$2,800
14	02513	ASPHALT CONCRETE	1	LS	\$8,599.50	\$8,600
15	02713	DRAINAGE IMPROVEMENTS	1	LS	\$10,000	\$10,000
16	02950	LIVE WILLOW TRANSPLANT	5	EA	\$250	\$1,250
17	03300	BRIDGE ABUTMENTS AND WINGWALLS	1	LS	\$229,104	\$229,104
18	05500	MODULAR STEEL BRIDGE	1	LS	\$102,000	\$102,000
19	05500	TIMBER RAILINGS	1	LS	\$12,000	\$12,000
20	05500	EROSION CONTROL	1	LS	\$5,000	\$5,000
21	05500	REVEGETATION	1	LS	\$5,000	\$5,000
SUBTOTAL						\$832,358
CONTINGENCY (15%)						\$124,854
TOTAL						\$957,212

ADJUSTED COSTS FOR INCREASING CHANNEL PROFILE GRADE TO 4%

5A	02222	UNCLASSIFIED EXCAVATION	366	CY	\$20	\$7,311
7A	02270	IMPORT ENGINEERED STREAMBED MATERIAL	-242	CY	\$75	-\$18,151
8A	02270	INSTALL ENGINEERED STREAMBED MATERIAL	-346	CY	\$60	-\$20,606
						-\$31,446

NOTES:

- Quantities shown are approximate only; the Contractor shall be responsible for all work indicated on the Drawings and prescribed in the Specifications.
- In the event that the product of a unit price and an estimated quantity does not equal the extended amount stated, the unit price will govern and the correct product of the unit price and the estimated quantity shall be deemed to be the bid amount.
- 30% of Engineered Streambed Material is assumed to come from salvage of on-site materials.
- Costs do not include Design and Construction Support Services



WATERWAYS
CONSULTING, INC.

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS

SAN JOSE CREEK FISH PASSAGE IMPROVEMENTS

DOWNSTREAM SITE - ALTERNATIVE 1 (BRIDGE AND 4% CHANNEL)

CONCEPT LEVEL SUBMITTAL

DATE: 1/7/2015

BY: B.M.S.

CHECKED: M.W.W.

Bid Item	Specifications Section	ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE	COST
1	01500	MOBILIZATION	1	LS	\$70,000	\$70,000
2	02050	DEMOLITION	1	LS	\$46,122	\$46,122
3	02110	CLEARING AND GRUBBING	1	LS	\$12,000	\$12,000
4	02140	DEWATERING	1	LS	\$9,000	\$9,000
5	02222	UNCLASSIFIED EXCAVATION	3,712	CY	\$20	\$74,248
6	02226	ENGINEERED FILL	1	LS	\$31,672	\$31,672
7	02270	IMPORT ENGINEERED STREAMBED MATERIAL	1,284	CY	\$75	\$96,320
8	02270	INSTALL ENGINEERED STREAMBED MATERIAL	1,835	CY	\$60	\$109,346
9	02270	IMPORT ROCK SLOPE PROTECTION	313	CY	\$75	\$23,500
10	02270	INSTALL ROCK SLOPE PROTECTION	313	CY	\$56.90	\$17,828
11	02270	IMPORT WEIR BOULDERS	336	CY	\$75	\$25,221
12	02270	INSTALL WEIR BOULDERS	1	LS	\$31,809	\$31,809
13	02272	LOG STRUCTURES	1	LS	\$5,600	\$5,600
14	02713	DRAINAGE IMPROVEMENTS	1	LS	\$10,000	\$10,000
15	02950	LIVE WILLOW TRANSPLANT	5	EA	\$250	\$1,250
16	03300	BRIDGE ABUTMENTS AND WINGWALLS	1	LS	\$183,512	\$183,512
17	05500	MODULAR STEEL BRIDGE	1	LS	\$65,000	\$65,000
18	05500	TIMBER RAILINGS	1	LS	\$12,000	\$12,000
19	05500	EROSION CONTROL	1	LS	\$5,000	\$5,000
20	05500	REVEGETATION	1	LS	\$5,000	\$5,000
SUBTOTAL						\$834,428
CONTINGENCY (15%)						\$125,164
TOTAL						\$959,592

ADJUSTED COSTS FOR DECREASING CHANNEL PROFILE GRADE TO 3.2%

5A	02222	UNCLASSIFIED EXCAVATION	1,598	CY	\$20	\$31,952
7A	02270	IMPORT ENGINEERED STREAMBED MATERIAL	378	CY	\$75	\$28,329
8A	02270	INSTALL ENGINEERED STREAMBED MATERIAL	540	CY	\$60	\$32,161
						\$92,442

NOTES:

1. Quantities shown are approximate only; the Contractor shall be responsible for all work indicated on the Drawings and prescribed in the Specifications.
2. In the event that the product of a unit price and an estimated quantity does not equal the extended amount stated, the unit price will govern and the correct product of the unit price and the estimated quantity shall be deemed to be the bid amount.
3. 30% of Engineered Streambed Material is assumed to come from salvage of on-site materials.
4. Costs do not include Design and Construction Support Services



WATERWAYS
CONSULTING, INC.

ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS
SAN JOSE CREEK FISH PASSAGE IMPROVEMENTS
DOWNSTREAM SITE - ALTERNATIVE 2 (CULVERT AND 4% CHANNEL)
CONCEPT LEVEL SUBMITTAL

DATE: 1/7/2015

BY: B.M.S.

CHECKED: M.W.W.

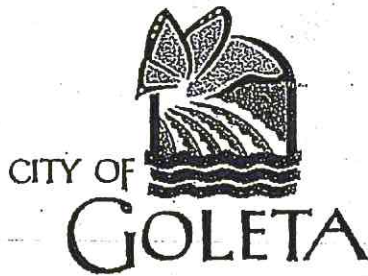
Bid Item	Specifications Section	ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE	COST
1	01500	MOBILIZATION	1	LS	\$60,000	\$60,000
2	02050	DEMOLITION	1	LS	\$46,122	\$46,122
3	02110	CLEARING AND GRUBBING	1	LS	\$12,000	\$12,000
4	02140	DEWATERING	1	LS	\$9,000	\$9,000
5	02222	UNCLASSIFIED EXCAVATION	3,712	CY	\$20	\$74,248
6	02226	ENGINEERED FILL	1	LS	\$43,394	\$43,394
7	02270	IMPORT ENGINEERED STREAMBED MATERIAL	1,284	CY	\$75	\$96,320
8	02270	INSTALL ENGINEERED STREAMBED MATERIAL	1,835	CY	\$60	\$109,346
9	02270	IMPORT ROCK SLOPE PROTECTION	313	CY	\$75	\$23,500
10	02270	INSTALL ROCK SLOPE PROTECTION	313	CY	\$56.90	\$17,828
11	02270	IMPORT WEIR BOULDERS	336	CY	\$75	\$25,221
12	02270	INSTALL WEIR BOULDERS	1	LS	\$31,809	\$31,809
13	02272	LOG STRUCTURES	1	LS	\$5,600	\$5,600
14	02713	DRAINAGE IMPROVEMENTS	1	LS	\$10,000	\$10,000
15	02950	LIVE WILLOW TRANSPLANT	5	EA	\$250	\$1,250
16	05500	CONCRETE ARCH CULVERT AND WINGWALLS	1	LS	\$175,020	\$175,020
17	05500	TIMBER RAILINGS	1	LS	\$12,000	\$12,000
18	05500	EROSION CONTROL	1	LS	\$5,000	\$5,000
19	05500	REVEGETATION	1	LS	\$5,000	\$5,000
SUBTOTAL						\$762,659
CONTINGENCY (15%)						\$114,399
TOTAL						\$877,058

ADJUSTED COSTS FOR DECREASING CHANNEL PROFILE GRADE TO 3.2%

5A	02222	UNCLASSIFIED EXCAVATION	1,598	CY	\$20	\$31,952
7A	02270	IMPORT ENGINEERED STREAMBED MATERIAL	378	CY	\$75	\$28,329
8A	02270	INSTALL ENGINEERED STREAMBED MATERIAL	540	CY	\$60	\$32,161
						\$92,442

NOTES:

- Quantities shown are approximate only; the Contractor shall be responsible for all work indicated on the Drawings and prescribed in the Specifications.
- In the event that the product of a unit price and an estimated quantity does not equal the extended amount stated, the unit price will govern and the correct product of the unit price and the estimated quantity shall be deemed to be the bid amount.
- 30% of Engineered Streambed Material is assumed to come from salvage of on-site materials.
- Costs do not include Design and Construction Support Services



March 21, 2017

CITY COUNCIL

Paula Perotte
Mayor

Stuart Kasdin
Mayor Pro Tempore

Roger S. Aceves
Councilmember

Michael T. Bennett
Councilmember

Kyle Richards
Councilmember

CITY MANAGER
Michelle Greene

Helen Birss, Branch Chief
Watershed Restoration and Grants Branch
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

RE: SAN JOSE CREEK STEELHEAD RESTORATION

Dear Ms. Birss,

This letter is to offer the City of Goleta's support for the grant application by the Cachuma Resource Conservation District to the California Department of Fish and Wildlife's Proposition 1 Restoration Grant Program to fund construction for a significant steelhead-trout-recovery project in the City's largest stream: San Jose Creek.

The City has constructed the majority of a major flood control and steelhead restoration project in San Jose Creek within Old Town Goleta. The lower 4,100 feet of the channel is complete. The replacement of the Hollister Avenue Bridge over the creek beginning in 2018 will complete the project. Once construction is complete, steelhead will be able to migrate up to a private ranch in the foothills above Goleta, where they will encounter the next two upstream barriers to migration. We understand that the Environmental Defense Center and Cachuma Resource Conservation District are working in cooperation with landowners for the removal of these barriers.

While these next two barriers upstream are just north of the City limits, their removal will enhance the City and benefit City residents by facilitating the return of a steelhead run in San Jose Creek, within the City. This project will further the goals of the City in constructing the flood control and fish passage project in Old Town; it will make that project more successful by opening up two miles of high quality spawning habitat.

This work will complement the City of Goleta's fish passage component of the San Jose Creek project now under construction. Please let me know if you have any other questions and keep us advised on the progress of this work.

Sincerely,

A handwritten signature in black ink, appearing to read "Michelle Greene". The signature is fluid and cursive, with the first name "Michelle" and last name "Greene" clearly distinguishable.

Michelle Greene
City Manager

C: Rosemarie Gaglione, Public Works Director

SALUD O. CARBAJAL
24TH DISTRICT, CALIFORNIA
WEBSITE: CARBAJAL.HOUSE.GOV

COMMITTEE ON ARMED SERVICES
SUBCOMMITTEE ON
TACTICAL AIR AND LAND FORCES
SUBCOMMITTEE ON READINESS
COMMITTEE ON THE BUDGET

Congress of the United States
House of Representatives
Washington, DC 20515

212 CANNON HOUSE, OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-3601

360 SOUTH HOPE AVENUE, C-301
SANTA BARBARA, CA 93105
(805) 730-1710

1411 MARSH STREET, SUITE 205
SAN LUIS OBISPO, CA 93401
(805) 546-8348

March 24, 2017

Helen Birss, Branch Chief, Watershed Restoration Grants Branch
California Department of Fish and Wildlife,
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

RE: Letter of Support for the San Jose Creek Steelhead Trout Restoration Project

Dear Ms. Birss:

I am writing to express my strong support for the Cachuma Resources Conservation District's (CRCD) Prop-1 Grant Application to the California Department of Fish and Wildlife. The CRCD, working with the Environmental Defense Center and two agricultural land owners, is applying for this grant for the removal of steelhead migration barriers along the San Jose Creek in Santa Barbara County, within the 24th Congressional District which I represent.

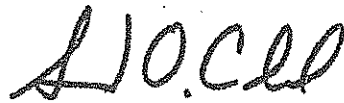
As you know, the Southern Steelhead is a federally listed endangered fish species, which migrates from the Pacific Ocean to freshwater streams and rivers to spawn. The steelhead population is endangered due to in-stream barriers that impede its migration and prevent the completion of its natural life cycle.

The National Marine Fisheries Service's Southern Steelhead Recovery Plan identified the removal of barriers to migration as a critical recovery action necessary to bring this notable species back from the brink of extinction.

This grant requested by the CRCD will provide funds to remove an obsolete dam and other impediments to the steelhead migration in the San Jose Creek, which is designated in the Recovery Plan as a significant stream for steelhead habitat restoration. This design will also include the restorative measure of planting native trees along the San Jose Creek bank. Importantly, funds from your department have already assisted in the completion of the Final Feasibility Study for this project.

For these reasons, I urge you to give the Cachuma Resources Conservation District's grant request your full and fair consideration, consistent with all relevant rules and regulations. If you have any questions, please feel free to contact Wendy Motta in my Santa Barbara District Office at (805) 730-1710.

Sincerely,

A handwritten signature in dark ink, appearing to read "L.O. Carbal", with a stylized, cursive-like script.

SALUD CARBAJAL
Member of Congress

LOIS CAPPS
24TH DISTRICT, CALIFORNIA

2231 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-0524
(202) 225-3601
www.capps.house.gov

COMMITTEE ON
ENERGY AND COMMERCE



Congress of the United States
House of Representatives

DISTRICT OFFICES:

- ☐ 1411 MARSH STREET, SUITE 205
SAN LUIS OBISPO, CA 93401
(805) 546-8348
- ☐ 301 EAST CARRILLO STREET, SUITE A
SANTA BARBARA, CA 93101
(805) 730-1710
- ☐ 1101 SOUTH BROADWAY, SUITE A
SANTA MARIA, CA 93454
(805) 349-3832

March 14, 2013

Mary L. Larson
Sr. Environmental Scientist Supervisor
California Department of Fish and Wildlife
South Coast Region
4665 Lampson Avenue, Suite C
Los Alamitos, CA 90720

Re: Letter of Support for San Jose Creek Steelhead Trout Restoration Project

Dear Ms. Larson:

I am writing to support the Cachuma Resources Conservation District's (CRCD) Fisheries Restoration Program Grant Application to the California Department of Fish and Wildlife. The CRCD, working with the Environmental Defense Center and an agricultural landowner, is applying for this grant to remove two barriers to steelhead migration in San Jose Creek.

The Southern Steelhead is a federally listed endangered fish species which migrates from the Pacific Ocean to freshwater streams and rivers to spawn. The steelhead population is endangered because in-stream barriers impede its migration and prevent the completion of its natural life cycle.

The National Marine Fisheries Service's Southern Steelhead Recovery Plan identifies removal of barriers to migration as a critical recovery action necessary to bring this important species back from the brink of extinction.

The grant requested by the CRCD will provide funds to reverse some of the damage in the San Jose Creek watershed, which is designated in the Recovery Plan as an important stream for steelhead habitat restoration. Specifically, the grant will help fund a feasibility study and preliminary design for the removal of two significant barriers to steelhead migration, opening up additional high quality habitat for steelhead. The project will also include planting of native trees on the stream bank.

The recovery of endangered species is a critical local, state and national concern. I am encouraged that the CRCD and its partners are collaborating on this important project that will benefit generations of local residents and visitors to the Santa Barbara area.

I urge you to give full and fair consideration to the CRDC's grant application, pursuant to all relevant rules and regulations. Should you have any questions about my support for this project, please contact Rachel Kondor in my office at (805) 730-1710.

Sincerely,

A handwritten signature in cursive script that reads "Lois Capps". The signature is written in dark ink and is centered on the page.

LOIS CAPPS
Member of Congress

JANET WOLF
County Supervisor, Second District

MARY E. O'GORMAN
Chief of Staff

NAOMI KOVACS
District Representative

HILDA LOPEZ
Board Administrative Assistant

BOARD OF SUPERVISORS
105 East Anapamu Street, 4th Floor
Santa Barbara, California 93101

TELEPHONE: (805) 568-2191

FAX: (805) 568-2283

E-mail: jwolf@sbcbos2.org

www.countyofsb.org/bos/vwolf

SANTA BARBARA COUNTY

August 25, 2016

Mr. Douglas Bosco, Board Chair
State Coastal Conservancy
1330 Broadway, Suite 1300
Oakland, CA 94612

Re: Support for San Jose Creek Steelhead Recovery and Restoration Project - Proposition 1 Grant Application

Dear Mr. Bosco,

As Second District Supervisor in Santa Barbara County, I want to express my enthusiastic support of the request by the Cachuma Resources Conservation District (CRCD) and the Environmental Defense Center (EDC) for Proposition 1 grant funding through the State Coastal Conservancy to remove three barriers to steelhead migration in San Jose Creek, located in the heart of Santa Barbara County's Second District.

The proposed project is a great example of a public-private partnership on agricultural ranch land, with support from the landowners (two long-time farming families), the City of Goleta, County of Santa Barbara Flood Control District, Congresswoman Lois Capps, Senator Hannah-Beth Jackson, Assemblyman Das Williams, and myself.

The Southern Steelhead population, a federally listed endangered fish species, is currently impeded in its migration, and therefore prevented from spawning and reproducing, by an obsolete dam and two at-grade road crossings. This project will replace these barriers with two span bridges to relocate the road out of the creek and restore steelhead access to more than two miles of quality spawning and rearing habitat. The project will also improve water quality, riparian habitat conditions, stream flow, and access for the farming operations.

In 2012, the National Marine Fisheries Service, which supports the project, released the Southern Steelhead Recovery Plan. The Plan identifies removal of barriers to migration as a critical recovery action necessary to bring this important species back from the brink of extinction. The Plan designates the Goleta Slough Watershed, including San Jose Creek, as a Core 1 (highest priority) habitat for the recovery of steelhead in southern California.

The CRCD and EDC have secured funding to complete the feasibility analysis, and finalize engineering and design. They seek funding from the State Coastal Conservancy to complete the biological surveys and analysis, to complete a riparian habitat restoration plan, and to initiate local, state, and federal project permitting.

Thank you for your consideration of funding this important project.

Sincerely,


Janet Wolf
Santa Barbara County Second District Supervisor

Cc: Brian Trautwein, Environmental Defense Center
Anne Coates, Cachuma Resources Conservation District



Santa Barbara County Public Works Department
Flood Control & Water Agency & Project Clean Water

March 9, 2017

Brian Trautwein
Environmental Analyst
Environmental Defense Center
906 Garden St.
Santa Barbara CA 93101

RE: San Jose Creek Steelhead Barrier Removal Project

This letter is to offer the Santa Barbara County Flood Control District's support for grant applications by the Environmental Defense Center and Cachuma Resource Conservation District to fund the removal of two fish passage barriers on San Jose Creek. We understand that you are working in cooperation with the landowners.

This work will complement other fish passage projects that have been completed such as the City of Goleta's San Jose Creek project that included a fish passage component. Please let me know if you have any other questions and keep us advised on the progress of this work.

Sincerely

A handwritten signature in cursive script that reads "Maureen Spencer".

Maureen Spencer
Environmental Resources Manager

CAPITOL OFFICE
STATE CAPITOL, ROOM 2032
SACRAMENTO CA 95814
TEL 916 651-4019
FAX 916 651-4919

SANTA BARBARA COUNTY OFFICE
222 E CARRILLO STREET
SUITE 309
SANTA BARBARA CA 93101
TEL 805-965-0862
FAX 805-965-0701

VENTURA COUNTY OFFICE
300 E ESPLANADE DRIVE
SUITE 430
OXNARD, CA 93036
TEL 805 988-1940
FAX 805-988-1945

California State Legislature

SENATOR
HANNAH-BETH JACKSON
NINETEENTH SENATE DISTRICT



CHAIR
SENATE JUDICIARY
CALIFORNIA LEGISLATIVE
WOMEN'S CAUCUS
SELECT COMMITTEE
ON PASSENGER RAIL
VICE CHAIR
JOINT LEGISLATIVE COMMITTEE
ON EMERGENCY MANAGEMENT
COMMITTEES
BUSINESS, PROFESSIONS &
ECONOMIC DEVELOPMENT
ENVIRONMENTAL QUALITY
LABOR & INDUSTRIAL
RELATIONS
NATURAL RESOURCES
& WATER
JOINT COMMITTEE ON ARTS

August 18, 2016

Mr. Douglas Bosco, Board Chair
State Coastal Conservancy
1330 Broadway, Suite 1300
Oakland, CA 94612

**RE: Support for the Cachuma Resource Conservation District's Proposition 1 Grant
Application for the San Jose Creek Steelhead Trout Restoration Project**

Dear Chairman Bosco:

As the State Senator representing the 19th Senate District, which includes the proposed San Jose Creek Steelhead Trout Restoration Project area, I am writing in support of the Cachuma Resource Conservation District's (RCD) application for Proposition 1 grant funding through the State Coastal Conservancy. The RCD is applying for this grant to remove three barriers to steelhead migration in San Jose Creek, in partnership with the Environmental Defense Center (EDC) and the landowners – two long-time local farming families.

The Southern Steelhead is a federally listed endangered fish species which migrates from the Pacific Ocean to freshwater streams and rivers to spawn. The steelhead population is endangered because in-stream barriers impede its migration and prevent spawning and reproduction. This important project will remove an obsolete dam and two road crossings, and will replace the crossings with two span bridges to relocate the road out of the creek and restore steelhead access to more than two miles of quality spawning and rearing habitat. The project will also make critical improvements to water quality and stream flows.

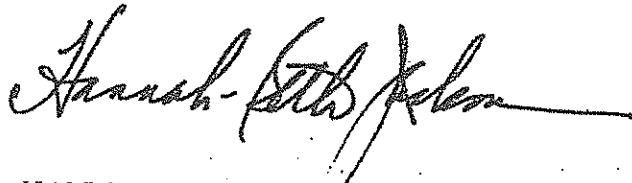
The National Marine Fisheries Service (NMFS) listed steelhead as a federally endangered species in 1997, because the population had dropped from between 36,000-42,000, down to approximately 500 adult steelhead. NMFS has stated that southern California steelhead is one of the most endangered fish in the United States. NMFS' 2012 Southern Steelhead Recovery Plan identifies removal of barriers to migration as a critical recovery action necessary to bring this important species back from the brink of extinction. The Recovery Plan designates the Goleta Slough Watershed, including San Jose Creek, as a Core 1 (highest priority) habitat for recovering steelhead.

RCD and EDC have already secured the funding needed to complete the draft and final feasibility analysis and finalize engineering and design. The grant requested by the RCD will provide funds needed to complete biological surveys, a riparian habitat restoration plan, and to initiate the local, state and federal permit processes. The project will also include planting of native trees on the stream bank.

I strongly support RCD's application for funding, because the recovery of endangered species is of local, state and national concern. I am encouraged that the RCD, EDC and partners -- including the City of Goleta, Santa Barbara County Flood Control District, and Santa Barbara Urban Creeks Council -- are collaborating on this important project which will benefit generations of local residents and visitors to Santa Barbara.

Thank you in advance for your consideration. If you need further information, please feel free to contact my Santa Barbara District Office at 805-965-0862.

Sincerely,

A handwritten signature in cursive script, reading "Hannah-Beth Jackson". The signature is written in dark ink and is positioned above the printed name.

HANNAH-BETH JACKSON
Senator, 19th District

HBJ: am



United States Department of Agriculture

March 29, 2017

Dr. Glenn Russell, Director
Santa Barbara County Planning and Development Department
123 E Anapamu Street
Santa Barbara, CA 93101

I visited the San Jose Creek Steelhead Recovery project site along with two NRCS engineers familiar and experienced with stream restoration projects on the Central Coast. Our site visit was in response to a request for conservation planning assistance from the Cachuma Resource Conservation District and the landowner. We completed the first steps in the NRCS Conservation Planning process by inventorying natural resources, identifying resource concerns, and determining landowner objectives.

Our site visit identified in-stream man-made barriers to fish migration as the primary resource concern. Several project alternatives were discussed, but no decisions were made at the time. Each alternative would remove the barriers and restore a natural stream grade, while maintaining landowner access. Typically these types of projects are expensive, requiring several funding sources from multiple partners to cover design, permitting and construction. NRCS funding is limited for a barrier removal project, so our role would be advisory as Conservation Technical Assistance, or CTA. In this role we can utilize the NRCS planning process to guide decisions of the project partners.

Based on the NRCS planning process, what is being proposed to remove the barriers and restore the riparian ecosystem is absolutely appropriate to address the identified resource concern. I support the efforts of all organizations involved to restore the migration corridors of the Southern Steelhead.

Sincerely,

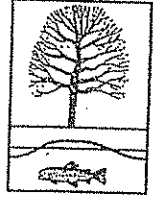
A handwritten signature in black ink, appearing to read "Jeff Rodriguez", with a stylized flourish at the end.

Jeff Rodriguez
District Conservationist
USDA-Natural Resources Conservation Service

SANTA BARBARA URBAN CREEKS COUNCIL

P.O. Box 1467, Santa Barbara, CA 93102 (805) 962-8260 sbucc@silcom.com

<http://www.sb-urbanicreeks.org>



August 23, 2016

Douglas Bosco, Chair
California Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612

Re: San Jose Creek Fish Passage Improvements letter of support

Chairman Mr. Bosco:

Santa Barbara Urban Creeks Council is a grass roots non-profit organization with thousands of members in Santa Barbara County whose mission since 1987 is to protect and preserve our creeks and watersheds.

Of particular concern to us are the steelhead trout threatened by past development in our local streams.

San Jose Creek already has a year round population of resident steelhead in its upper reaches. A recently completed project by the City of Goleta removed the major barrier to steelhead migration in San Jose Creek. The San Jose Creek Fish Passage Improvements project would remove the last of the barriers that presently prevent steelhead from migrating from the ocean up the creek to spawning habitat located upstream from the current project location.

We support the Cachuma Resource Conservation District's application for funding from the Coastal Conservancy to remove the last of fish migration barriers on San Jose Creek in Santa Barbara.

Sincerely,

A handwritten signature in dark ink, appearing to read "Rick Frickmann".

Rick Frickmann, President

STATE CAPITOL
P.O. BOX 942649
SACRAMENTO, CA 94249-0377
(916) 319-2037
FAX (916) 319-2137
www.assembly.ca.gov/williams

Assembly California Legislature



DAS WILLIAMS
ASSEMBLYMEMBER, THIRTY-SEVENTH DISTRICT

COMMITTEES
CHAIR, NATURAL RESOURCES
BUDGET
HIGHER EDUCATION
UTILITIES AND COMMERCE
WATER, PARKS AND WILDLIFE
BUDGET SUBCOMMITTEE
NO. 3 ON RESOURCES AND
TRANSPORTATION

JOINT COMMITTEE
FISHERIES AND AQUACULTURE

CHAIR, ASIAN AND PACIFIC
ISLANDER LEGISLATIVE
CAUCUS

August 9, 2016

Mr. Douglas Bosco, Board Chair
State Coastal Conservancy
1330 Broadway, Suite 1300
Oakland CA 94612

Re: San Jose Creek Steelhead Recovery and Restoration Project

Dear Mr. Bosco,

I am writing to express my support for the San Jose Creek Steelhead Recovery and Restoration Project sponsored by the Cachuma Resource Conservation District ("RCD") and the Environmental Defense Center ("EDC"). This project aims to restore steelhead migratory access to over 2 miles of high quality steelhead spawning and rearing habitat. The project also enjoys the support of the landowners including two long-time local farming families, by the City of Goleta, County of Santa Barbara Flood Control District, County Supervisor Janet Wolf and Congresswoman Lois Capps.

An obsolete dam dating to the 1950s and two at-grade road crossings prevent upstream migration of steelhead to historic spawning grounds. The project will remove all these structures, restore the stream, and replace the crossings with span bridges to keep the road and vehicles out of the restored creek. The project will improve water quality, enhance access for the farming operations, improve riparian habitat conditions and streamflow, and restore access for steelhead.

The RCD is requesting funding from the Coastal Conservancy to complete the biological surveys and analysis, and initiate local, state and federal project permitting. Separate funding from the National Fish and Wildlife Foundation is currently being utilized to complete the project's engineering and design. The project has also received financial support from the City of Goleta, California Department of Fish and Wildlife, and two local foundations.

Southern California Steelhead is one of the most endangered fish in the United States according to the National Marine Fisheries Service which supports the project. According to the 2012 Southern California Steelhead Recovery Plan, the southern California steelhead has plummeted from between 32,000-46,000 down to an estimated 500 adult fish. The Recovery Plan lists the Goleta Slough Watershed, including San Jose Creek, as a Core 1 (highest priority) habitat for recovery of steelhead in southern California. The Recovery Plan lists critical recovery actions, and this includes removing barriers to steelhead migration as will be accomplished by this project.

This project has been extremely well planned and is needed to bring steelhead back from the brink of extinction. I urge you to approve full funding for the San Jose Creek Steelhead Recovery and Restoration Project.

Thank you,

DAS WILLIAMS
Assemblymember, 37th District

LAWRENCE E. HUNT
Curriculum Vitae

Hunt & Associates Biological Consulting Services
5290 Overpass Road, Suite 108, Santa Barbara, California 93111

Phone: (805) 967-8512 Cell: (805) 689-7423 e-mail: anniella@verizon.net

Title: Consulting Biologist

Expertise: Herpetology, Mammalogy, and Terrestrial Ecology
Endangered Species Surveys and Habitat Evaluations
Conservation Biology and Habitat Conservation Plans
Habitat Restoration Design and Implementation
Impact Assessment and Mitigation Planning
Compliance Monitoring
Spatial Statistics and Biostatistics
Lecturer in Conservation Biology and Endangered Species Management, University of California
Affiliate Curator in Herpetology, Cheadle Center for Biodiversity & Ecological Restoration, UC-Santa Barbara

Statement of Qualifications. Lawrence Hunt is a consulting biologist with over 35 years of experience with rare, threatened and endangered plant and wildlife species and their habitats in the western United States, Mexico, and Chile, focusing on rare, threatened, and endangered plants, crustaceans, fish, amphibians, reptiles, birds, and mammals of central and southern California. Hunt & Associates, headed by Lawrence Hunt, brings together qualified specialists with extensive experience in design and management of biological resource surveys and analyses, including special-status species survey design and implementation, biological assessments and evaluations, EIR/EISs, habitat restoration plans, habitat conservation plans (HCPs), statistical data analysis, local, state, and federal resource agency consultation, mitigation analyses, habitat restoration design and implementation, and permit compliance monitoring. Clients include planning departments for city and county governments and planning agencies, state and federal resource management agencies, non-governmental conservation organizations, and private corporations and individuals. Since 1985, Hunt & Associates has been involved in hundreds of projects throughout central and southern California and southern Nevada, as well as several international consulting projects in Mexico, Chile, and Portugal.

CEQA/NEPA Projects. Hunt & Associates is a certified Small Business Entity (SBE) with extensive experience in all aspects of the preparation and implementation of CEQA/NEPA permitting documents, including: biological assessments, environmental assessments, Biological Resources chapters for EIR/EISs, biological resource (plant and wildlife) surveys, natural area characterizations, biological constraints analyses, impact assessment and mitigation recommendations, and environmental compliance monitoring. The following examples represent some of the largest of these types of projects that Hunt & Associates has been involved in to date:

Electrical Transmission Corridor Projects:

- **1984-1993: Mobil Oil, Unocal, and Exxon Electrical Transmission Line Projects, Monterey, Madera, Kern, Tulare, Fresno, Los Angeles, Riverside, and San Bernardino counties, California.** Project biologist on five regional projects installed to deliver electricity from new cogeneration facilities. Responsibilities included resource agency coordination/consultation, designing field survey protocols, organizing and conducting field surveys and vegetation mapping, preparing biological documents, project permitting, and supervising construction monitoring teams during project implementation.
- **1993-1994: SCE 65Kv Transmission Line Project, Santa Barbara County, California.** Project biologist to County of Santa Barbara Planning & Development Department. Conducted pre-construction surveys, constraints analyses, impact assessments; prepared biological assessment and supervised construction monitoring.
- **1997-1998: ARCO Line 90 Electrical Transmission Project, Kern and Riverside counties, California.** Project biologist to ENSR Consulting, Inc. to conduct special-status species surveys and prepare biological assessment of project.
- **2001-2002: Enron-Pastoria Creek Power Plant Project, Tejon Ranch, Kern County, California.** Project biologist to URS Corporation to conduct field surveys for special-status plants and wildlife in the Pastoria Creek, Tunis Creek, Tejon Creek, and Grapevine Creek watersheds on the western side of the Tehachapi Mountains; prepared biological constraints analyses of various proposed transmission line routes; prepared biological assessment of project impacts and mitigation.
- **2012-2014: Path 15 Transmission Line Project, Fresno and Madera counties, California.** Senior wildlife biologist to Aspen Environmental Group, Inc. and the U.S. Department of Energy (Western Area Power Administration) to design and conduct special-status plant and wildlife surveys of existing transmission tower sites slated for repair/maintenance;

prepared biological assessment and developed mitigation measures to avoid impacts to listed reptiles, birds, and mammals; conducted protocol-level pre-construction surveys for listed or fully-protected reptiles, birds, and mammals along transmission line route.

- **2012-2015: San Luis Transmission Line Project, Fresno and Madera counties, California.** Senior wildlife biologist to Aspen Environmental Group, Inc. and the U.S. Department of Energy (Western Area Power Administration) to design and conduct special-status plant and wildlife surveys of preferred and alternative transmission line routes and substation locations; prepared biological constraints analysis and biological assessment of project; conducted protocol surveys for listed or fully-protected reptiles and mammals along preferred route.

Fiber Optic Transmission Corridor Projects:

- **1988-1992: Sprint Fiber Optic Line Installation Project, Kern, Los Angeles, and San Bernardino counties, California and Clark County, Nevada.** Senior project biologist to Dames & Moore, Inc. to conduct special-status species surveys, prepare biological assessments and supervise construction monitoring during installation across Mojave Desert to Nevada.
- **2001-2003: Level (3) Communications Fiber Optic Line Installation Project, Santa Barbara County, California.** Senior project biologist/resource specialist and environmental compliance coordinator to the County of Santa Barbara Planning and Development Department; conducted pre-construction special-status species surveys and monitoring, prepared biological assessments and supervised construction monitoring during line installation.
- **2002-2004: Evolved Expendable Launch Vehicle (EELV), Delta IV Launch System Program, Vandenberg Air Force Base, Santa Barbara County, California.** Project biologist to ENSR, Inc. and the U.S. Air Force on fiber-optic line installations portion of the project on Vandenberg AFB. Conducted pre-construction surveys for special-status species, prepared biological assessments, supervised construction monitoring, and prepared non-native plant eradication and native habitat restoration plan for project.

Oil and Gas Transmission Line Projects:

- **1993-1997: Kern River Gas Pipeline Transmission Project, Utah, Nevada, and Kern County, California.** Project biologist to Dames & Moore, Inc. on the 1,200-mile long pipeline installation project. Conducted field surveys, prepared biological constraints analyses and impact assessment/mitigation analyses, and supervised construction monitoring.
- **1994-1998: Pacific Pipeline Crude Oil Pipeline, Kern and Los Angeles counties, California.** Senior project biologist to Pacific Pipeline Company, LLC to install and operate 175-mile long crude oil pipeline, including 60 miles through Angeles National Forest. Conducted biological constraints analyses for preferred and alternate pipeline routes, biological assessments, habitat evaluation, vegetation mapping, pre-construction surveys for special-status plant and animal species, consultation with Tejon Ranch attorneys and other land managers and landowners; supervised compliance monitoring of mitigation measures during pipeline construction and initial phase of operations.
- **1996-1998: Proyecto Gasoducto Transandino (Trans-Andean Natural Gas Pipeline Project), Argentina and Chile.** Senior Environmental Scientist to the Dames & Moore, Inc. and the Interior Ministry of Chile on proposed 1,500-mile long natural gas pipeline. Prepared biological evaluations and constraints analyses of preferred and alternative pipeline routes from Argentina, across the Andes Mountains, to receiving station/gas plants on the Pacific Ocean west of Santiago, Chile; identified project-related impacts; developed mitigation recommendations and permit compliance plans.
- **1999-2000: Thermo Eco-Tek Natural Gas Pipeline and Cogeneration Facility Project, San Bernardino and Orange counties, California.** Project biologist to ENSR Corporation to conduct pre-construction surveys for special-status reptiles, birds, and small mammals and prepare biological assessment of project.
- **2002-2008: ExxonMobil Corporation Oil Pipeline Maintenance Program, Kern and Tulare counties, California.** On-call biologist to ENSR Corporation for repair/maintenance projects; prepared biological assessments and conducted protocol-level pre-construction surveys and construction monitoring for listed or fully-protected reptiles and mammals.
- **2003-2006: Sempra Energy Company Programmatic Biological Assessment for Pipeline Operations and Maintenance Activities, Madera, Fresno, Tulare, Kern, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, Riverside, and San Bernardino counties, California.** Project biologist to ENSR Corporation and Southern California Gas Company (Sempra Energy Company) to develop Programmatic Biological Assessment; analyzed biological resources along numerous existing pipeline routes, assessed maintenance and operation impacts, and proposed mitigation measures to reduce or avoid potential impacts to resources to allow operations and maintenance activities to comply with California Department of Fish and Wildlife permit conditions, U.S. Fish and Wildlife Service Biological Opinions, and California Public Utilities Commission permit conditions.
- **2004-2009: Woodside Liquefied Natural Gas (LNG) Re-Gasification Terminal and Pipeline Distribution Project, Los Angeles and Orange counties, California.** Project biologist to ENSR Corporation and Woodside Petroleum, Australia to prepare biological assessment of proposed offshore unloading and re-gasification terminal to be located in the Southern

- California Bight 20 miles off Los Angeles; prepared biological constraints analysis of preferred and alternate gas pipeline upgrade routes from proposed onshore receiving stations in coastal Los Angeles and Orange counties.
- **2007-2008: M-70 Crude Oil Pipeline Extension Project, Los Angeles County, California.** Project biologist to ENSR, Inc. and ExxonMobil Corporation to prepare biological assessment and impact and mitigation analysis; conduct pre-construction surveys for special-status plants and wildlife, particularly listed fish species, and supervise construction compliance monitoring.
- **2011-2014: Exploratory Seismic Testing Project, Newhall Ranch, Los Angeles County, California.** Project biologist to Occidental Petroleum Company on proposed exploratory drilling project for natural gas and crude oil reserves. Prepared biological assessment of proposed seismic testing program and conducted biological constraints analysis to determine routes of least impact to special-status habitats and plant and wildlife species during seismic testing.

Renewable Energy Transmission Projects:

- **2006-2009: Tehachapi/Antelope Valley PdV Wind Energy Project, Antelope-Pardee Wind Energy Project, and Tehachapi Renewable Transmission Project (TRTP) Project, Kern and Los Angeles counties, California.** Project biologist to Aspen Environmental Group, Inc. and California Public Utilities Commission (CPUC) on the permitting phases of these three projects to upgrade transmission lines to receive wind-generated energy from turbine fields in the Tehachapi Mountains and Antelope Valley; prepared biological assessments and DEIR/EIS biology sections for DEIR/EISs; provided peer review to CPUC of other consultants' work products.
- **2010-2011: Topaz Solar Facility, Carrizo Plain, San Luis Obispo County, California.** Project biologist to Althouse & Meade Consultants, Inc. to conduct field surveys for special-status amphibians, reptiles, and mammals for biological assessment and EIR documents during permitting phase of project.
- **2010-2011: NextEra North Sky River Wind Energy Project, Piute Mountains, Kern County, California.** Project biologist to CH2MHill, Inc. and North Sky River Energy, LLC to conduct field surveys and habitat evaluations for special-status reptiles and amphibians, focusing on listed salamanders (Tehachapi slender salamander and yellow-blotched salamander); prepared biological assessment, impact analysis, and mitigation recommendations in locating access/service roads and wind turbine sites in order to avoid impacts to listed and other special-status species.
- **2013-2015: City of Vernon Wind Energy Project, Piute Mountains, Kern County, California.** Project biologist to CH2MHill, Inc. and the U.S. Fish and Wildlife Service to conduct field surveys and habitat evaluations for special-status reptiles and amphibians, focusing on listed salamanders (Tehachapi slender salamander and yellow-blotched salamander); prepared biological assessment, impact analysis, and mitigation recommendations regarding location of access/service roads and wind turbine sites in order to avoid impacts to listed and other special-status species.

Federal and State Highway and Bridge Projects:

- **1989-1995: California Department of Transportation Highway Construction and Widening Projects, Madera, Fresno, and Kern counties, California.** Senior project biologist to Dames & Moore, Inc. and CalTrans on one highway construction and two highway widening projects. Conducted focused surveys for listed or special-status amphibians and reptiles, including sampling and evaluating habitat quality of over 250 vernal pools and vernal pool complexes for special-status plants, crustaceans (fairy shrimp), and amphibians (California tiger salamander, California red-legged frog, and western spadefoot); conducted impact analysis and developed mitigation recommendations for CEQA and NEPA documents.
- **1997-2003: Bacara Resort and Hotel Bridge Construction Project, Santa Barbara County, California.** Senior project biologist and project manager to County of Santa Barbara Planning & Development Department during construction of resort hotel project that included construction of two new bridges over Bell Canyon and Tecolote creeks; conducted pre-construction surveys for monarch butterfly, southern steelhead, tidewater goby, and California red-legged frog and implemented the Environmental Quality Assurance (EQAP) Program for permit compliance to avoid impacts to monarch butterfly roost and listed aquatic species in creek corridors.
- **2002-2009: Federal Highway Works Administration Bridge Replacement Projects, San Luis Obispo County, California.** Project biologist to Garcia & Associates, Inc. and County of San Luis Obispo Planning Department on three bridge replacement projects (Highway 1, Santa Rosa Creek Road, and Pozo Road); conducted surveys for listed or special-status species of fish, amphibians, reptiles, and birds for CEQA/NEPA permitting documents.
- **2010-2012: Creek Road Bridge Replacement Project, Ventura County, California.** Project biologist to Galvin Preservation Associates and County of Ventura Public Works Agency to conduct field surveys for listed fish, amphibians, and birds in San Antonio Creek; implemented permit compliance and BMP monitoring during bridge construction and habitat restoration phases of project.

Water Conveyance Projects:

- **2000-2004: Morris Reservoir and San Gabriel Reservoir Sediment Removal Pilot Program, Los Angeles County, California.** Project biologist to Los Angeles Department of Water and Power (LADWP) to design and implement before and after assessments of impacts of in-stream sedimentation on aquatic invertebrate communities and special-status amphibian and reptile species within the San Gabriel River Canyon following release of sediment from Morris and Cogswell dams; prepared biological assessment of effects of sediment sluicing on aquatic and riparian resources to the California Department of Fish and Game.
- **2003-2005: Mojave Check Valve 66 Replacement Project, Mojave River, San Bernardino County, California.** Project biologist to California Department of Water Resources, U.S. Fish and Wildlife Service, and Aspen Environmental Group, Inc. to conduct special-status fish, amphibian, bird, and mammals surveys in advance of proposed water pipeline valve replacement project; designed and implemented focused surveys and impact assessment for the endangered arroyo toad (*Bufo californicus*) in Little Horsethief Creek and Mojave River.
- **2004-2006: Tehachapi Embayment Project, Kern and Los Angeles counties, California.** Project biologist to Aspen Environmental Group, Inc. and California Department of Water Resources to conduct field surveys for special-status reptiles, birds, and mammals for proposed improvement of South Portal Embayment of California Aqueduct along south slopes of the Tehachapi Mountains and adjacent Antelope Valley on Tejon Ranch; prepared impact assessment and mitigation recommendations for various project designs.
- **2005-2007: Seawater Pipeline Replacement Project, University of California, Santa Barbara County, California.** Project biologist to UCSB Facilities Management Department; prepared biological assessment of proposed project to replace and upgrade seawater intake pipelines for Marine Science Institute at Campus Point; conducted and/or supervised onshore and nearshore field surveys of proposed pipeline route; implemented construction monitoring and permit compliance program during pipeline installation.
- **2007-present: Matilija Dam Removal and Ecosystem Restoration Project, Ventura County, California.** Senior project biologist to Ventura County Watershed Protection District to supervise field implementation of non-native plant eradication effort on 16-mile reach of upper Ventura River and main stem Matilija Creek floodplain in advance of future Bureau of Reclamation and U.S. Army Corps of Engineers project to remove Matilija Dam. Supervised implementation of Giant Reed Removal Element of project, involving removal of giant reed (*Arundo donax*) and six other target species of non-native plants in floodplain; conducted pre-construction surveys and monitoring of listed and special-status plants, fish, amphibians, reptiles, birds, and mammals during initial non-native vegetation treatment and annual re-treatment efforts; assembled and supervised team of biologists and monitors to monitor compliance of work crews during vegetation treatment and removal with California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and Regional Water Quality Control Board permit conditions; developed and implemented program to document and analyze natural recolonization of project area by native vegetation.
- **2012: Five Oaks Dam Sediment Release Project, Santa Ana River, Riverside County, California.** Project biologist to U.S. Army Corps of Engineers to conduct before and after surveys at various locations for listed and special-status fish, amphibians, and reptiles during sediment releases from Five Oaks Dam; supervised team of three biologists; prepared summary reports to USACE of results of surveys and evaluations of riparian and aquatic habitats before and after sediment release.
- **2015-present: Ventura River V-11 Invasive Plant Removal and Ecosystem Restoration Project, Ventura County, California.** Senior project biologist to Ventura County Watershed Protection District to supervise field implementation of non-native plant eradication effort on 5-mile reach of middle main stem of Ventura River on two preserves managed by the Ojai Valley Land Conservancy and one preserve managed by the Ventura Hillsides Conservancy. Supervised implementation of removal of giant reed (*Arundo donax*) and five other target species of non-native plants in floodplain and riparian habitats along main stem of river; conducted pre-construction surveys and monitoring of listed and special-status plants, fish, amphibians, reptiles, birds, and mammals during initial non-native vegetation treatment and subsequent re-treatment efforts; assembled and supervised team of biologists and monitors to monitor compliance of work crews during vegetation treatment and removal with California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and Regional Water Quality Control Board permit conditions; developed and implemented program to document and analyze natural recolonization of project area by native vegetation.

Species Recovery Plans, Habitat Conservation Plans, and Species/Habitat Management Plans:

- **1987-1988: Chancellor's Advisory Committee, University of California Natural Reserve System.** Evaluated candidate sites in Santa Barbara County in terms of habitat quality and rare species occurrence for inclusion in the UC Natural Reserve System.
- **1993-2000: Kern County Valley Floor Habitat Conservation Plan, Kern County, California.** Assisted Dames & Moore, Inc. biologists and County of Kern Planning and Development Department planners with determining conservation targets,

- evaluating conservation areas, developing mitigation credits, and assessing project-related impacts and mitigation recommendations for Federal and State special-status plants and wildlife.
- **1998-2000: Black Legless Lizard (*Anniella pulchra nigra*) Status Review, Monterey County, California.** Client: U.S. Fish and Wildlife Service, Sacramento Regional Office, California. Reviewed available literature and research studies and conducted field research to evaluate distribution of this taxon in City of Marina and on Fort Ord to determine taxonomic status and conservation lands for possible listing.
 - **2000-2002: Lake Los Carneros County Park Habitat Management Plan, Santa Barbara County, California.** Client: County of Santa Barbara Parks and Recreation Department. Evaluated existing habitat and wildlife resources and current visitor uses and impacts to create a long-term management plan for the 300-acre park that maximized habitat values.
 - **1998-2001: California Red-legged Frog (*Rana aurora draytonii*) Recovery Plan:** Member, Scientific Committee for U.S. Fish and Wildlife Service, Ventura Field Office, California.
 - **2001-2002: Tidewater Goby (*Eucyclogobius newberryi*) Recovery Plan:** Provided peer review of draft plan to U.S. Fish and Wildlife Service, Ventura Field Office, California.
 - **2002-2014: California Tiger Salamander (*Ambystoma californiense*) Recovery Plan:** Member, Scientific Committee that developed draft and final recovery plan for the Santa Barbara County Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*) for the U.S. Fish and Wildlife Service, Ventura Field Office, California.
 - **2005-2007: California Tiger Salamander (*Ambystoma californiense*) occurrence in the 'gap region' of San Luis Obispo County, California.** Client: U.S. Fish and Wildlife Service, Ventura Field Office. Evaluated status of specimens in museum collections and anecdotal reports of tiger salamanders in southern San Luis Obispo County, including specimen found in Brizzolari Creek on campus of Cal-Poly SLO; sampled all water bodies in Brizzolari Creek watershed for salamanders, and checked museum records and specimens of tiger salamanders from San Luis Obispo County to verify that 80-mile gap in distribution of tiger salamanders from southern Monterey County to northern Santa Barbara County is, in fact, real.
 - **2006-2008: California Tiger Salamander (*Ambystoma californiense*) Habitat Conservation Strategy:** Client: County of Santa Barbara Planning and Development Department, U.S. Fish and Wildlife Service, and Wildlife Conservation Board, Washington, D.C. Wrote and obtained grant from USFWS and Wildlife Conservation Board to create county-level conservation strategy between regulatory agencies and landowners to deal with CTS on private property.
 - **2008-2009: Southern Steelhead (*Oncorhynchus mykiss*) Recovery Plan:** Senior Scientist contracted to National Marine Fisheries Service to prepare the *Threats Analysis* and *Recovery Actions* sections for the recovery plans for the South-Central California watershed (Monterey to Santa Barbara County) Recovery Plan and the Southern California watershed (Santa Barbara County to Mexican border) Recovery Plan for the southern steelhead. Collaborated with The Nature Conservancy to adapt their Conservation Action Planning (CAP) Workbook method (spreadsheet) to rank habitat conditions for steelhead in watersheds from Monterey County to the Mexican border in terms of anthropogenic impacts and potential for recovery.
 - **2009: Newhall Ranch Habitat Conservation Plan, Newhall Ranch, Los Angeles County, California.** Client: Aspen Environmental Group, Inc. and California Department of Fish and Game. Reviewed and commented on Draft 6,500-acre HCP for proposed Newhall Ranch residential/commercial development project, including site visits to verify habitat conditions and species presence.
 - **2007-present: Matilija Dam Removal and Ecosystem Restoration Project and Ventura River Invasive Plant Removal and Ecosystem Restoration Project, Ventura County, California.** Senior biologist to Ventura County Watershed Protection District to design, implement, and report on permit compliance monitoring of non-native plant removal and special-status species protection during watershed-wide habitat improvement project (see further information under "Water Conveyance Projects"). Obtained additional funds from VCWPD to measure and analyze patterns of natural colonization of areas cleared of non-native vegetation (2009-2010 and 2014-2015).
 - **2010-2012: Status and Evaluation of Non-Native Tiger Salamander (*Ambystoma mavortium*) Introductions in Santa Barbara County, California.** Client: U.S. Fish and Wildlife Service, Ventura Field Office. Summarized existing information on location, land ownership, condition, and genetic status and extent of hybridization between native and non-native tiger salamander populations in Santa Barbara County Distinct Population Segment of the California tiger salamander (*Ambystoma californiense*).
 - **2014-present: Geographic extent of introgression between native and introduced tiger salamanders (genus *Ambystoma*) in Santa Barbara County, California.** Section 6 grant from U.S. Fish and Wildlife Service and California Department of Fish and Wildlife, administered through Cachuma Resource Conservation District. Collaboration of several biologists to sample known and potential California tiger salamander (*Ambystoma californiense*) breeding sites and collect tissues for genetic analysis to determine if threat of hybridization with introduced non-native tiger salamanders (*Ambystoma mavortium*) is spreading.
 - **2014-2016: San Pedro Creek Watershed Biological Resource Evaluation, Santa Barbara County, California.** Project biologist to L&P Consultants, Slippery Rock Ranch, LLP, and Land Trust for Santa Barbara County to conduct assessment of quality of riparian and upland habitats for special-status plants and wildlife resources on 800 acres of San Pedro Creek

watershed on Slippery Rock Ranch. Prepared summary report of biological value of watershed for possible future Land Trust management.

- 2015-present: Monarch butterfly Habitat Restoration and Management Plan, Santa Barbara County, California. Client: City of Santa, California Department of Fish and Wildlife, and Xerxes Society. Developed and implemented plan to monitor and improve habitat conditions for largest overwintering roost of monarch butterfly (*Danaus plexippus*) in City of Santa Barbara.

Academic Background

Ph.D. Candidate in Evolutionary Ecology. Dissertation: *Predictability of Geographic Distribution of Legless Lizards, Genus Anniella, at Multiple Spatial Scales*. Dept. Ecology, Evolution, and Marine Biology, University of California-Santa Barbara

M.S., with honors, 1982: Ecology and Systematics (Herpetology). Thesis: *Geographic Patterns of Morphological Variation in the Lizard Genus, Anniella Gray 1852*. University of Kansas Dept. of Ecology and Systematics and Museum of Natural History

B.S., with honors, 1976: Vertebrate Zoology (Herpetology), University of California-Berkeley

Citizenship: United States

International Consulting/Research Experience: Mexico, Chile, England, Portugal

Professional Affiliations

American Society of Ichthyologists and Herpetologists
Society for the Study of Amphibians and Reptiles
American Society of Zoologists
Sigma Xi Honorary Scientific Society

Peer-Reviewed Publications:

1980. Hunt, L.E. and J. Ottley. Geographic Distribution: *Crotalus viridis helleri*. *Herpetological Review*, 12(2): 65.
1982. Hunt, L.E. Reproduction and feeding in *Eridiphas slevini* (Serpentes: Colubridae). *Herpetological Review*, 13(1): 8-9.
1983. Hunt, L.E. Annotated bibliography of the desert tortoise, *Gopherus agassizi* (Book Review) *Herpetological Review*, 14(1): 25.
1983. Hunt, L.E. A nomenclatural rearrangement of the genus *Anniella* (Sauria: Anniellidae). *Copeia* 1983(1): 79-89.
1984. Hunt, L.E. et al., (co-editors). Contributions to Vertebrate Zoology and Systematics: A Tribute to Henry S. Fitch. *Special Publications of the Museum Natural History, University of Kansas. No. 10.* 278 pp.
1984. Hunt, L.E. Geographic patterns of morphological variation in the lizard genus *Anniella*. Masters Thesis. Univ. of Kansas, Lawrence. 302 pp.
1985. Schultze, H.P., L.E. Hunt and J. Chorn. Type and figured specimens of fossil vertebrates in the collections of the University of Kansas, Museum of Natural History, Part II: Fossil Amphibians and Reptiles. *Miscellaneous Publications of the Museum of Natural History, University of Kansas No. 77.* 66 pp.
1985. Fleischer, R., M. Murphy and L.E. Hunt. Clutch size increase and intraspecific brood parasitism in the yellow-billed cuckoo (*Coccyzus americanus*). *Wilson Bulletin* 97(1): 125-127.
1993. Hunt, L.E. Origin, maintenance and land use of aeolian sand dunes in the Santa Maria Basin, California. Prep. for The Nature Conservancy and U.S. Air Force, Vandenberg AFB. 72 pp.
1994. Hunt, L.E. Capture, relocation and monitoring of a southwestern pond turtle (*Clemmys marmorata pallida*) population on the upper Santa Ynez River, Santa Barbara County, California; Gibraltar Dam Strengthening Project. Prepared for the City of Santa Barbara, U.S. Forest Service and Woodward-Clyde Consultants. 135 pp.
1997. Hunt, L.E. Geostatistical modeling of species distributions: Implications for biogeographical and ecological studies, pp. 427-438, In: Soares, A. et al., (eds.). *Geostatistics for Environmental Applications*. Kluwer Academic Publishers, London. 556 pp.
2009. Hunt, L.E. Species accounts for: *Anniella*, *Anniella pulchra*, *Anniella geronimensis*. Catalogue of American Amphibians and Reptiles, Society for the Study of Amphibians and Reptiles. Lawrence, KS. 39 pp.
- In prep. Hunt, L.E. Geographic breaks in the regional distribution of California tiger salamanders in San Luis Obispo County, California: Real or artifact? *Herpetological Review*.
- In prep. Hunt, L.E. Geographic Distribution: *Coleonyx variegates abbotti*. *Herpetological Review*.

- In prep.* Hunt, L.E. Additions to the pulmonate snail fauna of Ventura County. *The Veliger*.
- In prep.* Hunt, L.E. and B. Roth. A new species of land snail (Pulmonata: Helminthoglyptidae) from Ventura County, California. *The Veliger*.
- In prep.* Hunt, L.E. and H.B. Shaffer. Early-stage hybridization of native and non-native tiger salamanders in the Santa Barbara County Distinct Population Segment (DPS) of the California Tiger Salamander. *Herpetological Review*.

Grants and Awards:

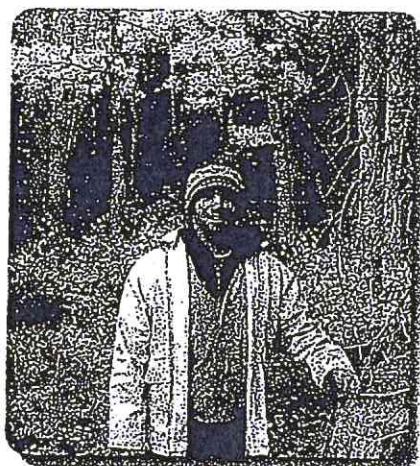
- 1976. National Science Foundation, Student Originated Studies Grant
- 1980. Phi Sigma Biology Honor Society, Univ. Kansas
- 1982. Regents Scholarship, University of California-Santa Barbara
- 1984. Masters Thesis, with honors, University of Kansas
- 1985. National Audubon Society, Research Grant
- 1988. Storrer Award, American Society of Ichthyologists and Herpetologists
- 1988. Academic Instructional Grant, University of California-Santa Barbara
- 1989. Graduate Dissertation Fellowship, University of California-Santa Barbara
- 1989. 1st World Congress in Herpetology, Canterbury, England, Invited Speaker
- 1990. Research Grant, The Nature Conservancy
- 1994-2003. Academic Development Grant, Patagonia, Inc. and University of California-Santa Barbara
- 1996. Excellence in Reclamation Award, California Mining Association
- 1996. 1st European Conference on Geostatistics, Lisbon, Portugal, Invited Speaker
- 1997. Society for Ecological Restoration-Dune Guild, San Luis Obispo, CA, Invited Speaker
- 1998. 2nd European Conference on Geostatistics, Valencia, Spain, Invited Speaker
- 2001. Santa Ynez Natural History Association, Santa Ynez, CA, Invited Speaker
- 2002. Research Grant, Oil Spill Prevention and Remediation Program, California Department of Fish and Game
- 2003. University of California-Santa Barbara Habitat Restoration Group, Invited Speaker
- 2003. Threatened and Endangered Amphibians and Reptiles of Southern California, The Wildlife Society and Bureau of Land Management, Riverside, CA, Invited Speaker
- 2005. Wildlife Conservation Board and U.S. Fish and Wildlife Service, California Tiger Salamander Regional Conservation Strategy Grant, Washington, D.C.
- 2010-present. U.S. Fish and Wildlife Service, Endangered Species Research Grants, Ventura Field Office, California
- 2010-2013. Seminar on Ecological Restoration and Conservation (EEMB 188), University of California-Santa Barbara, Guest Lecturer

Certifications: California Department of Transportation, Horizontal Directional Drilling Inspector (2001)

Permits: U.S. Fish and Wildlife Service 10(a)1(a) Recovery (handling) Permits for the California tiger salamander, California red-legged frog; and several species of fairy shrimp
California Department of Fish and Game -- Scientific Collecting Permit

County Approved Qualified Biologist Lists: Kern, Monterey, San Luis Obispo, Santa Barbara, Ventura, Los Angeles

LEH: jan2017



EDUCATION/CERTIFICATIONS

Registered Professional Civil
Engineer, State of California
#71421

Professional Engineer, State of
Oregon #84565PE

Qualified Stormwater Pollution
Prevention Plan Developer #21546

M.S. San Jose State University,
San Jose; 2006, Water Resource
Engineering

B.S. Humboldt State University,
Arcata; 2002, Environmental
Resource Engineering

EMPLOYMENT HISTORY

2005-2009 Project Engineer. : SH+G
Engineering. Civil Engineering and
Ecosystem Restoration, Santa Cruz,
CA.

2003-2005 Assistant Engineer: Atlas
Engineering Services, Santa Cruz, CA.

SPECIALIZED TRAINING

2007 HEC-RAS Sediment Transport
Computer Workshop, U.S. ACOE

2006 HEC-RAS Computer Workshop,
ASCE

2002 OSHA Hazardous Waste
Operations and Emergency Response
Training

Brian is a registered professional engineer with over thirteen years of experience in a range of civil and water resource applications. Brian applies his engineering background in hydraulics and sediment transport to a variety of restoration, habitat enhancement, and flooding analysis projects throughout the state of California and Oregon. Brian's primary focus over the past three years has been on the design and implementation of fish passage improvement projects. His current responsibilities include project management, design and preparation of construction documents, field surveying, construction observation, and hydraulic/hydrologic analysis for application in various river, stream, and wetland restoration and habitat enhancement projects. Past project experience includes:

- Fish passage and habitat enhancement analysis and design
- Stream bank and profile stabilization design incorporating boulder weirs, logs, fabric encapsulated soil lifts, and other bioengineering techniques.
- River and stream restoration design
- Drainage analysis
- Land surveying
- Topographic map development
- Construction staking and as-built surveys
- Storm Water Pollution Prevention Plans
- Hydraulic modeling with steady and unsteady flow applications

SELECTED PROJECT EXPERIENCE

Assistant Engineer. Glenbrook Creek Restoration Project. Nevada Tahoe Conservation District. Douglas County, NV. 2012-Present.

Project Manager. Tajiguas Ranch Fish Passage Projects. Maz Properties, Inc. Santa Barbara CA. 2011-Present.

Design Engineer. Trout Creek Truckee Restoration Project. Town of Truckee. Truckee, CA. 2007-Present.

Design Engineer. City of St. Helena Comprehensive Flood Protection Project. City of St. Helena. St. Helena, CA. 2002-Present.

Design Engineer. Bateman Creek Culverts Fish Passage Improvement Project. Tualatin River Watershed Council. Washington County, OR. 2010-2012.

Design Engineer. Half Mile Lane - Roderick Creek Restoration Plan. Clean Water Services. Washington County, OR. 2009-2010.

Project Manager. Widdoes/Karlson Crossing at Gobernador Creek Fish Passage Improvement Project. South Coast Habitat Restoration, Carpinteria CA. 2008-2014.

Design Engineer. Koinonia Fish Passage Improvement Project. Resource Conservation District of Santa Cruz. Corralitos, CA. 2008-2010.

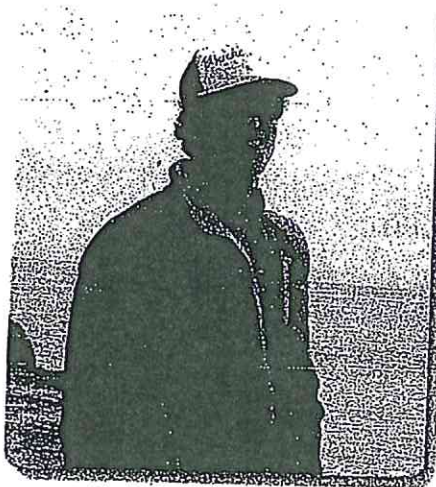
Design Engineer. Cookhouse Meadow Restoration Plan. US Forest Service, Ecosystems Restoration Unit. Lake Tahoe Basin, Completed 2008.

Design Engineer. Blackwood Creek Stream Restoration Project (4 phases). US Forest Service, Ecosystem Restoration Unit. Lake Tahoe Basin. 2001-2014.

GREGOR PATSCH, P.E., SENIOR ENGINEER



WATERWAYS
CONSULTING, INC.



EDUCATION/CERTIFICATIONS

Professional Engineer, State of
Virginia #041647

Professional Engineer, State of
Nevada #020800

B.S. Civil Engineering, University
of Virginia, 2001

EMPLOYMENT HISTORY

2012-2015 Project Manager:
Timmons Group. Civil Engineering,
Richmond, VA.

2005-2012 Water Resources
Engineer: County of Albemarle,
Charlottesville, VA.

2001-2005 Engineer in Training:
SH+G Engineering. Civil Engineering
and Ecosystem Restoration, Santa
Cruz, CA.

Gregor Patsch has been working in the field of water resources for the last 14 years in both the public and private sectors and on both the east and west coasts. Gregor has a strong background in stormwater management planning and design, as well as stream restoration and floodplain analyses. Gregor has extensive experience assisting local governments with master planning, MS4 permit compliance, and project implementation. Gregor has also worked many years as project manager overseeing the design and construction of numerous public Capital Improvement Projects. Gregor currently resides in Ventura County and is actively expanding Waterways' reach to service the Southern California region. Past project experience includes:

- Stormwater BMP planning, design, and construction management
- Stream stabilization and enhancement projects
- MS4 Permit Compliance
- Flood control and dam safety analysis
- Hydraulic and hydrologic modeling
- Erosion and sediment control plans and SWPPP's

SELECTED PROJECT EXPERIENCE

Project Engineer. Arroyo Grande Waterway Management Program,
County of San Luis Obispo, San Luis Obispo, CA. 2015.

Project Engineer. Pennington Creek Fish Passage Project, Trout
Unlimited, San Luis Obispo County, CA. 2015-2016.

Project Engineer. Circle G Ranch, Fish Passage Improvement Project,
South Coast Habitat Restoration, Carpinteria, CA. 2015.

Project Engineer. Gillie Ranch Bridge and Gate School Crossing Removal,
Hartigan/Foley G.B.C. Inc., Carpinteria, CA. 2015.

Staff Engineer. Camp Pico Blanco Fish Ladder and Dam Retrofit. Boy
Scouts of America, Monterey Bay Area Council, Little Sur River, Carmel,
CA 2004-2005.

Staff Engineer. Cookhouse Meadow Restoration Project, United States
Forest Service, South Lake Tahoe, CA 2003-2004.

Staff Engineer. Watsonville Trails Master Plan, City of Watsonville,
Watsonville, CA 2002-2004.

Brian G. Trautwein
158 Verona Avenue, Goleta CA 93117
(805) 722-0842 btraut@edcnet.org

Education:

University of California, Santa Barbara

Major: Environmental Studies - Natural Resource Management

Degree: Bachelor of Arts, 1989, GPA 3.60 (High Honors)

Santa Barbara City College, 1984 – 1987, GPA 3.82 (Dean's Honor List)

University of California Continuing Education & UC Cooperative Extension:

- Restoring Southern California Steelhead – 1998
- Wetlands Regulatory Update – 1999
- CESA and Streambed Alteration Agreements – 1999
- CEQA 2002 – Update, Issues, and Trends - 2001
- Watershed University – Ventura River - 2010

Vocation: Environmental Impact and Policy Analysis

Work History:

2/97 – Present: Environmental Analyst/Watershed Program Coordinator, Environmental Defense Center, a non-profit public interest environmental law firm working in Santa Barbara, Ventura and San Luis Obispo Counties. Duties include review and analysis of environmental documents and permit applications; drafting comment letters; analysis of impacts and policy consistency; developing general plan, CEQA, NEPA, Coastal Act and related cases; devising and critiquing habitat restoration plans, mitigation measures and alternatives; EDC Project Manager for Mission Creek Steelhead Recovery Project and Watershed Protection Program; public speaking; media relations; and developing and maintaining relationships with clients, community groups, private interests and public officials.

4/89 – 2/97: Founder, President and Executive Director, Santa Barbara Urban Creeks Council, Inc., an incorporated chapter of a statewide, non-profit watershed advocacy and creek restoration organization. Duties included coordinating staff of fundraisers and volunteers; developing and implementing creek restoration projects; review of environmental documents; researching, reviewing and commenting on environmental documents, policies and specific development proposals affecting watersheds; publishing quarterly newsletter; fundraising and applying for grants; membership development to 3,000, communicating with and educating the public, private businesses and landowners, government agencies and officials; and making regular public and televised speaking appearances.

5/91 – 2/97: Project Manager San Jose Creek Restoration Project (CA Department of Water Resources Urban Streams Restoration Program, Santa Barbara County Flood Control District, Santa Barbara Urban Creeks Council). Duties included facilitating interagency and public dialogue and cooperation; arranging public workshops, creek clean-ups, media events; coordinating restoration contractors; and overseeing the development and implementation of the restoration reports and the creek revegetation and bank stabilization projects.

8/91 – 12/91: Geomorphic Mapper, San Jose Creek Restoration Project. Duties included physical surveying and mapping of creek, creation of detailed geomorphic maps and ninety cross-sections; and assisting in the preparation of the geomorphic recommendations report.