



# County of Santa Cruz

## HEALTH SERVICES AGENCY

701 OCEAN STREET, ROOM 312, SANTA CRUZ, CA 95060-4073  
 (831) 454-2022 FAX: (831) 454-3128 TDD: (831) 454-4123

ENVIRONMENTAL HEALTH

October 10, 2000

AGENDA: October 24, 2000

Board of Supervisors  
 County of Santa Cruz  
 701 Ocean Street  
 Santa Cruz, CA 95060

### **SUBJECT: SAN LORENZO RIVER WATERSHED COASTAL CONSERVANCY GRANT - FISHERY ENHANCEMENT**

Members of the Board:

On June 13, 2000, your Board approved a grant of \$100,000 from the State Coastal Conservancy to prepare a fishery enhancement plan for the San Lorenzo River Watershed. Environmental Health staff is now recommending that your Board authorize approval of a contract for completion of that work.

#### **Background**

On March 7, 2000, your Board authorized staff to seek funding from the State Coastal Conservancy to enhance the fishery component of the San Lorenzo River Watershed Plan update. On March 23, 2000, the Coastal Conservancy Board approved a grant to the County of \$100,000. The County's work will be carried out in coordination with efforts by the City of Santa Cruz to develop strategies for fishery restoration in the lower River lagoon area. On June 13, your Board authorized execution of a contract with the State for the Grant and authorized approval of a Memorandum of Understanding (MOU) with the City for coordination of effort. The MOU was approved by the City on April 25, 2000. Work will be done primarily by consultants, with assistance and oversight from Environmental Health, Planning Department, the Resource Conservation District, State Fish and Game, and other technical and agency experts. Revenue and appropriations for professional services are included in the proposed supplemental budget request for Environmental Health. Work will be completed by April 30, 2002.

The project will accomplish the following tasks:

1. Provide a summary and analysis of issues affecting instream habitat and productivity of salmon and steelhead, including sedimentation, long term streamflow reduction, barriers, management of woody debris, temperature, health of riparian vegetation, and other factors.
2. Develop an inventory and preliminary designs of erosion control, habitat restoration projects, and recommendations for increased streamflow that will provide the greatest benefit for improving streambed conditions and restoring fish habitat.
3. Complete environmental review for the recommended projects.

### Consultant Selection


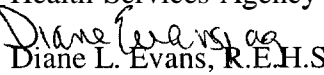
The preparation of the fishery enhancement strategy needs to be performed by a qualified consultant team with strong experience in local fisheries issues, erosion, sedimentation, stream geomorphology, hydrology, and sediment control and channel restoration methodologies. Environmental Health staff has followed standard County procurement procedures to identify a consultant who is qualified to perform this unique project. Staff solicited proposals from eight consulting firms experienced with this specific type of work. A subcommittee of the technical Advisory committee reviewed the three responses that were submitted.

Swanson Hydrology, in conjunction with Don Alley and Associates was selected to perform the work. They have strong local knowledge and current data and can maximize effort under a limited budget. Swanson Hydrology will work closely with the TAC and County staff in the completion of the work and development of recommendations. The TAC includes a broad based membership and can be expected to represent a wide range of opinions including those of the community at large. Swanson and Alley are also preparing the related work in the Lower River for the City of Santa Cruz, with the other component of the Coastal Conservancy grant.

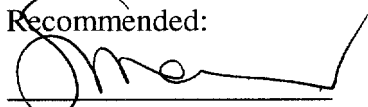
The cost of this study will not exceed \$100,000, which will come entirely from the grant funds provided by the Coastal Conservancy. Expenditures will be made out of the Environmental Health budget (362860, subobject 3665). It is expected that up to \$60,000 will be spent this fiscal year, with the remainder to be spent next fiscal year. The revenue and expenditures are already contained in the Environmental Health budget.

### Recommendation

It is therefore RECOMMENDED that your Board authorize the Health Services Agency Administrator to execute the proposed contract with Swanson Hydrology for preparation of a fishery enhancement strategy for the San Lorenzo River Watershed for an amount not to exceed \$100,000.

Sincerely,  
  
Rama Khalsa  
Health Services Agency Administrator  
  
Diane L. Evans, R.E.H.S.  
Environmental Health Director

Recommended:



Susan A. Mauriello  
County Administrative Office

cc: CAO  
County Counsel  
Auditor-Controller  
Health Services Agency  
Environmental Health  
Planning  
Swanson Hydrology

COUNTY OF SANTA CRUZ

REQUEST FOR APPROVAL OF AGREEMENT

0177

TO: Board of Supervisors
County Administrative Officer
County Counsel
Auditor-Controller

FROM: Health Services Agency (Dept.)
Rana Khase (Signature) 10/10/00

The Board of Supervisors is hereby requested to approve the attached agreement and authorize the execution of the same.

- 1. Said agreement is between the County of Santa Cruz (Agency) and Swanson Hydrology & Geomorphology, 115 Limekiln St., Santa Cruz, CA 95060 (Name & Address)
2. The agreement will provide for preparation of a fishery enhancement plan for the San Lorenzo Watershed.
3. The agreement is needed to implement work under a grant from the State Coastal Conservancy
4. Period of the agreement is from 10/15/00 to 6/30/01
5. Anticipated cost is \$ 60,000.00 through 6/30/01 (Fixed amount; Monthly rate, Not to exceed)
6. Remarks: Full term of contract is from 10/15/00 to 11/30/01 with a total contract amount not to exceed 100,000.00
7. Appropriations are budgeted in 362860 (Index#) 3665 (Subobject)

NOTE: IF APPROPRIATIONS ARE INSUFFICIENT, ATTACH COMPLETED FORM AUD-74

Appropriations are available and have been encumbered. Contract No. CO 02276 Date 10/11/00
GARY A. KNUTSON, Auditor - Controller
By Ronald J. Silva Deputy.

Proposa reviewed and approved. It is recommended that the Board of Supervisors approve the agreement and authorize the to execute the same on behalf of the (Agency).

Remarks: GS (Analyst) By Ch Silva County Administrative Officer Date 10/13/00

Agreement approved as to form. Date .

Distribut on: Bd. of Supv. - White
Auditor-Controller - Blue
County Admin. Officer - Canary
Auditor-Controller - Pink
Originating Dept. - Goldenrod
To Orig. Dept. if rejected.
ADM - 29 (6/95)

State of California )
County of Santa Cruz ) ss
I ex-officio Clerk of the Board of Supervisors of the County of Santa Cruz, State of California, do hereby certify that the foregoing request for approval of agreement was said Board of Supervisors as recommended by the County Administrative Officer by an order in the minutes of said Board on County Administrative Officer
BY Deputy Clerk

Santa Cruz County  
Health Services Agency

Professional Services Agreement

This agreement is entered into this 24th day of October, 2000, by and between the COUNTY OF SANTA CRUZ, hereinafter called COUNTY, and SWANSON HYDROLOGY & GEOMORPHOLOGY, hereinafter called CONTRACTOR. The parties agree as follows:

1. DUTIES. CONTRACTOR agrees to exercise special skill to accomplish the following result: CONTRACTOR is responsible for conducting field investigations, data analyses, and preparation of a report presenting a strategy and proposed projects for fishery enhancement in the San Lorenzo River Watershed, as described in the attached "Exhibit A", which is hereby made a part of this agreement.
2. COMPENSATION.
  - A. In consideration for CONTRACTOR accomplishing said services, COUNTY agrees to pay CONTRACTOR an amount not to exceed \$100,000.00, for completion of the tasks as shown in Exhibit A.
  - B. CONTRACTOR shall submit invoices for costs incurred quarterly, by the seventh working day of April, July, October, and January. Invoices shall be accompanied by a brief report of work completed during the billing period. Promptly after receipt of each invoice, but in no event later than sixty (60) days after its receipt COUNTY shall make payment thereon to the CONTRACTOR. Payment by COUNTY shall be contingent upon completion of work described in Exhibit A.
  - C. Funds provided under this contract shall not be used for payment of salaries to consultant in excess of the maximum daily rate for GS-18. The limit expressed herein does not include transportation and subsistence costs for necessary travel for work required under this contract.
3. TERM. The term of this agreement shall be: from the October 15, 2000 to November 30, 2001, unless terminated in accordance with Paragraph 4.
4. EARLY TERMINATION. Either party hereto may terminate this agreement at any time by giving thirty (30) days written notice to the other party.
5. SUBCONTRACTING CONTRACTOR shall not subcontract any portion of the work required by this Agreement without prior approval of COUNTY. COUNTY shall retain final approval authority for any and all "Scope of Services" of subcontractors for this project. The CONTRACTOR shall retain responsibility for satisfactory completion of all tasks to be carried out under any subcontract for work under this project.

CONTRACTOR agrees to include sections 6-1.1 in all contracts and tier subcontracts directly related to project performance.

6. AUDIT, ACCESS TO RECORDS

A. CONTRACTOR and any subcontractors shall maintain books and records pertinent to performances of all work related to this contract in an adequate manner and in accordance with generally accepted accounting principles and practices. The records must be sufficient to assure that contract funds are allocable to allowable costs.

B. At all reasonable times during the term of this contract and for five (5) years following final payment and closure of all other pending matters, the State Auditor General, the State Board, EPA, the Comptroller General of the United States, or any of their authorized representatives, shall have access to the records of the CONTRACTOR and any subcontractors related to work performed under this contract and the

CONTRACTOR shall make such records available for audit, examination, excerpts, and transcriptions.

C. CONTRACTOR and all subcontractors shall maintain books and records pertinent to performances of all work related to this agreement in an adequate manner and in accordance with generally accepted accounting principles and practices. The records must be sufficient to assure **that** agreement funds are allocated to allowable costs.

7. NONDISCRIMINATION CLAUSE.

A. During the performance of this contract, CONTRACTOR and its subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of race, religion, color, national origin, ancestry, physical disability (including HIV and AIDS), medical condition (cancer related), marital status, age (over 40), gender, sexual preference, or any other non-merit factor unrelated to job duties. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. CONTRACTOR and subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination and harassment. CONTRACTOR and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code, Section 12900 et seq.) and the applicable regulations promulgated thereunder (California Administrative Code, Title 2, Section 7285.0 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12990, set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations are incorporated into this contract by reference and made a part hereof as if set forth in full. CONTRACTOR and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the provisions of this non-discrimination clause.

B. CONTRACTOR shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the contract.

8. INDEMNIFICATION FOR DAMAGES, TAXES AND CONTRIBUTIONS. CONTRACTOR shall exonerate, indemnify, defend, and hold harmless COUNTY (which for purposes of paragraphs 11 and 12 shall include, without limitation, its officers, agents, employees and volunteers) from and against:

A. Any and all claims, demands, losses, damages, defense costs, or liability of any kind or nature which COUNTY may sustain or incur or which may be imposed upon them for injury to or death of persons, or damage to property as a result of, arising out of, or in any manner connected with the CONTRACTORS performance under the terms of this Agreement, excepting any liability arising out of the sole negligence of the COUNTY. Such indemnification includes any damage to the person(s), or property (ies) of CONTRACTOR and third persons.

B. Any and all federal, State, and local taxes, charges, fees, or contributions required to be paid with respect to CONTRACTOR and CONTRACTORS officers, employees and agents engaged in the performance of this Agreement (including, without limitation, unemployment insurance, social security and payroll tax withholding).

9. INSURANCE. CONTRACTOR, at its sole cost and expense, for the full term of this Agreement (and any extensions thereof), shall obtain and maintain at minimum all of the following insurance coverage(s) and requirements. Such insurance coverage shall be primary coverage as respects COUNTY and **any** insurance or self-insurance maintained **by** COUNTY shall be excess of CONTRACTOR'S insurance coverage and shall not contribute to it.

If CONTRACTOR utilizes one or more subcontractors in the performance of this Agreement, CONTRACTOR shall obtain and maintain Independent Contractor's Insurance as to each subcontractor or

otherwise provide evidence of insurance coverage for each subcontractor equivalent to that required of CONTRACTOR in this Agreement, unless CONTRACTOR and COUNTY both initial here \_\_\_\_\_/\_\_\_\_\_.

A. Types of Insurance and Minimum Limits

(1) Worker’s Compensation in the minimum statutorily required coverage amounts. This insurance coverage shall not be required if the CONTRACTOR has no employees and certifies to this fact by initialing here \_\_\_\_\_

(2) Automobile Liability Insurance for each of CONTRACTOR’s vehicles used in the performance of this Agreement, including owned, non-owned (e.g. owned by CONTRACTOR’s employees), leased or hired vehicles, in the minimum amount of \$500,000 combined single limit per occurrence for bodily injury and property damage. This insurance coverage shall not be required if vehicle used by CONTRACTOR is not a material part of performance of this Agreement and CONTRACTOR and COUNTY both certify to this fact by initialing here \_\_\_\_\_/\_\_\_\_\_

(3) Comprehensive or Commercial General Liability Insurance coverage in the minimum amount of \$1,000,000 combined single limit, including coverage for: (a) bodily injury, (b) personal injury, (c) broad form property damage, (d) contractual liability, and (e) cross-liability.

(4) Professional Liability Insurance in the minimum amount of \$\_\_\_\_\_ combined single limit, if, and only if, this Sub-paragraph is initialed by CONTRACTOR and COUNTY \_\_\_\_\_

B. Other Insurance Provisions

(1) If any insurance coverage required in this Agreement is provided on a “Claims Made” rather than “Occurrence” form, CONTRACTOR agrees to maintain the required coverage for a period of three (3) years after the expiration of this Agreement (hereinafter “post agreement coverage”) and any extensions thereof. CONTRACTOR may maintain the required post agreement coverage by renewal or purchase of prior acts or tail coverage. This provision is contingent upon post agreement coverage being both available and reasonably affordable in related to the coverage provided during the term of this Agreement. For purposes of interpreting this requirement, a cost not exceeding 100% of the last annual policy premium during the term of this Agreement in order to purchase prior acts or tail coverage for post agreement coverage shall be deemed reasonable.

(2) All required Automobile and Comprehensive or Commercial General Liability Insurance shall be endorsed to contain the following clause:

“The County of Santa Cruz, its officials, employees, agents and volunteers are added as an additional insured as respects the operations and activities of, or on behalf of, the named insured performed under Agreement with the County of Santa Cruz.”

(3) All required insurance policies shall be endorsed to contain the following clause:

“This insurance shall not be canceled until after thirty (30) days prior written notice has been given to:

Water Quality Program Manager  
Environmental Health Service  
701 Ocean Street, Room 3 12  
Santa Cruz CA, 95060”

(4) CONTRACTOR agrees to provide its insurance broker(s) with a full copy of these insurance provisions and provide COUNTY on or before the effective date of this Agreement with Certificates

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of Insurance for all required coverages. All Certificates of Insurance shall be delivered or sent to:  
 Water Quality Program Manager  
 Environmental Health Service  
 70 1 Ocean Street, Room 3 12  
 Santa Cruz CA, 95060

10. FINAL APPROVAL: CONTRACTOR agrees that all reports, manuals, statistics and any other documentation required under the terms of this Agreement are subject to final approval by the COUNTY's Water Quality Program Manager before project goals and objectives will be considered completed.
11. PARTIAL PERFORMANCE: It is hereby agreed that payments called for under this Agreement are based on performance of the items listed under Paragraph 1 (Duties). In the event all duties are not completed or delivered, the amount due under this Agreement shall be reduced on a pro-rated basis to be determined by COUNTY.
12. NONASSIGNMENT OF AGREEMENT: CONTRACTOR shall not assign or subcontract this Agreement to a third party unless prior written approval is obtained by COUNTY. Any assignment without such written consent shall automatically terminate this Agreement.
13. SUBCONTRACTS: CONTRACTOR agrees to maintain and make available to COUNTY copies of all written subcontracts.
14. INDEPENDENT CONTRACTOR STATUS: CONTRACTOR and COUNTY have reviewed and considered the principal test and secondary factors below and agree that CONTRACTOR is an independent contractor and not an employee of COUNTY. CONTRACTOR is responsible for all insurance (workers compensation, unemployment, etc.) and all payroll related taxes. CONTRACTOR is not entitled to any employee benefits. COUNTY agrees that CONTRACTOR shall have the right to control the manner and means of accomplishing the result contractor for herein.

PRINCIPAL TEST: The CONTRACTOR rather than COUNTY has the right to control the manner and means of accomplishing the result contracted for.

SECONDARY FACTORS: The extent of control which, by agreement, COUNTY may exercise over the details of the work is slight rather than substantial; (b) CONTRACTOR is engaged in a distinct occupation or business; (c) In the locality, the work to be done by CONTRACTOR is usually done by a specialist without supervision, rather than under the direction of an employer; (d) The skill required in the particular occupation is substantial rather than slight; (e) The CONTRACTOR rather than the COUNTY supplies the instrumentalities, tools and workplace; (f) The length of time for which CONTRACTOR is engaged is of limited duration rather than indefinite; (g) The method of payment of CONTRACTOR is by the job rather than by the time; (h) The work is part of a special or permissive activity, program, or project, rather than part of the regular business of COUNTY; (I) CONTRACTOR and COUNTY believe they are creating an independent contractor relationship rather than an employer-employee relationship; and (j) the COUNTY conducts public business.

It is recognized that it is not necessary that all secondary factors support creation of an independent contractor relationship, but rather that overall there are significant secondary factors which indicate that CONTRACTOR is an independent contractor.

By their signature to this Agreement, each of the undersigned certifies that it is his or her considered judgment that the CONTRACTOR engaged under this Agreement is in fact an independent contractor.

**SO**

IN WITNESS WHEREOF, the parties hereto have set their hands the day and year first written above.

COUNTY OF SANTA CRUZ

By: \_\_\_\_\_  
Health Services Administrator


CONTRACTOR

By:  \_\_\_\_\_

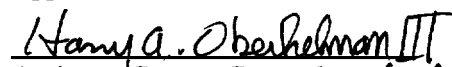
Address: 115 Limekiln St  
Santa Cruz, Ca 95060

Telephone: (831)427-0288

Approved as to insurance coverage:

 to- co - 2000  
County Risk Manager

Approved as to form:

  
Assistant County Counsel 10/19/00

Distribution:

- County Administrative Officer
- County Counsel
- Auditor-Controller
- Risk Management
- Health Services Agency
- Contractor



**Swanson Hydrology & Geomorphology**

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115 Limekiln Street Santa Cruz, California USA 95060  
phone 831-427-0288 / fax 427-0472 / email: [swanson@swansonh2o.com](mailto:swanson@swansonh2o.com)

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## **Fishery Enhancement Strategy for the San Lorenzo River**

### **SCOPE OF WORK**

#### **TASK 1. ADMINISTRATIVE – COUNTY STAFF**

#### **TASK 2. FISHERIES ASSESSMENT AND STRATEGY – D.W. ALLEY AND ASSOCIATES**

##### ***Subtask 2.1 Historical Data Review***

Historical data will be reviewed from previous salmonid habitat assessments and juvenile density surveys conducted by D.W. ALLEY & Associates from 1994-2000. These data will be combined with data from a 1981 fish sampling effort conducted by Alley and Smith, as well as data collected recently by the California Department of Fish and Game (CDFG). Instream Flow Incremental Methodology (IFIM) work, completed by D.W. Alley & Associates during a previous water feasibility study, will also be assessed. Previous inventories of streambank erosion will be utilized. The summary will include a discussion of efforts to improve habitat conditions by the City of Santa Cruz, San Lorenzo Valley Water District, CDFG and the National Marine Fisheries Service. Records of adult salmonid trappings at the Felton Diversion Dam and plantings of hatchery smolts by the Monterey Bay Salmon and Steelhead Project will be reviewed.

**Product:** A report will be prepared that analyses and summarizes previous salmonid habitat assessments and juvenile density surveys and defines, in a succinct manner, the important physical variables that have affected their decline. Factors that limit steelhead and coho salmon production in each portion of the River and the tributaries will be described and ranked in importance.

##### ***Subtask 2.2 Habitat Conditions and Population Estimates***

Historical data will be summarized with regard to current habitat conditions, estimates of present and historical salmonid populations and population trends. Factors limiting fish productivity will be identified with a description of each of the relevant causes. Limiting factors include sedimentation, long-term stream flow reduction, and presence of woody debris, riparian canopy/integrity, water temperatures, passage barriers, streambank erosion and flashboard dam operations. These factors will be considered watershed-wide.

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HEALTH SERVICES**

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***Subtask 2.3 Effects of Streamflow Reductions***

Once the hydrology has been described with regard to past streamflow reductions, the extent that these reductions have reduced habitat and fish production will be assessed. Differences in summer baseflow with and without diversions for dry, normal and wet years will be required for the analysis. The magnitude of improvement that may be expected from short and medium term changes in the flow regime will be discussed. Comparisons of juvenile densities and growth rates between years of varying baseflows and between reaches of differing streamflow within the same tributary will be utilized to assess densities under different flow scenarios. Rating curves will be developed comparing variables such as juvenile densities, pool volume and habitat quantity to flow to determine the value of increased flows in a particular reach.

The hydrologic information required for this task will be provided by information gathered and assembled in Task 4.

***Subtask 2.4 Prepare a Restoration Plan for Salmonids***

An overall strategy will be prepared to protect and enhance the steelhead population and restore a viable coho salmon population to the San Lorenzo River. Short and medium term implementation projects will be prioritized. Strategies will be directed at improving and restoring spawning migration access and spawning and rearing habitat quality for the full spectrum of streamflow conditions and future water demand. Management strategies affecting the various life stages of these salmonid species will involve management of winter and summer streamflow, retention of woody debris, modifying migration barriers, reducing erosion and sedimentation, improving overall aquatic habitat quality and restoring continuous riparian canopies and corridors.

**Product:** The report will provide a strategy to protect and enhance the steelhead population and restore a viable coho salmon population. Recommendations will be made regarding management of winter passage flows, summer baseflows in the tributaries and mainstem, retention of woody debris, modifying barriers, reducing sedimentation, improving riparian canopy conditions and purchasing public easements.

**TASK 3 -ASSESSMENT OF STREAM AND CHANNEL CONDITIONS – SWANSON  
HYDROLOGY & GEOMORPHOLOGY**

Based on historical analysis and assessment of current salmonid populations by the fisheries biologist (Task 2), 10-15 key reaches (up to 30 reaches may be sampled depending on the intensity of field sampling and whether sub-sampling of selected reaches is decided on by the meeting between the County and the Consultant team) on the San Lorenzo River and its main tributaries will be identified as sites for a long-term monitoring effort. SH&G staff will set up a field plan and conduct initial surveys under this contract, as well as define the protocol and locations of each reach or site, in order to facilitate future monitoring. An attempt will be made to choose several monitoring locations that overlap past bed condition assessment and fish population surveys in the

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Bean, Zayante, Lower Newell, and Love Creek drainages. The location of monitoring reaches will be mainly driven by fish habitat conditions.

The factors that will be measured to assess stream, channel, riparian conditions and habitat suitability will be embeddedness, percent fines, pool-riffle ratios, pool depth, pool volume ( $V^*$  or other appropriate measure) and percent riparian canopy. This will be accomplished by walking the selected reaches and measuring the linear distance along the thalweg of each habitat feature along with the maximum and average depth of each pool. The type of pool will also be noted (e.g.- boulder scour pool, plunge pool) in order to assess the relationship between structural elements and pool characteristics. Embeddedness and percent fines will be measured at every fifth habitat unit in order to represent 20% of the reach. These values will then be averaged over the entire reach to determine future changes in bed conditions over the entire reach. To assess total pool volume, 3-5 pools within each selected reach will be topographically surveyed in detail and monumented for repeat surveys. Specific methodology will be discussed at an initial project meeting between the County and the Consultant team.

The data collection and surveys will be conducted in the fall of 2000 and duplicated in the spring of 2001 to assess conditions under different flow regimes.

**Product:** A database of streambed and habitat suitability conditions for the selected reaches of stream on the mainstem and tributaries to the San Lorenzo River. Documented site locations, methodology and a monitoring plan will be developed to facilitate repeat surveys for future monitoring. Site documentation will include photo points to be referenced in future monitoring efforts.

#### **TASK 4 – HYDROLOGIC ANALYSIS – SH&G**

An assessment of flow conditions on the San Lorenzo River and important tributaries will be made based on available hydrologic data from past and existing stream gaging efforts within the watershed. Flow duration curves will be generated on a monthly basis for wet, average, and dry conditions. Based on the amount of data available, changes in streamflow over the period of record for each gage will be assessed and analyzed to determine the potential causes of those changes.

Based on information provided by the County on past and existing diversions and groundwater extractions, an assessment will be made describing the cumulative impacts of water use in the San Lorenzo watershed on important reaches of the San Lorenzo River and its tributaries.

**Product:** A report summarizing hydrologic conditions in the San Lorenzo River watershed with regard to changes in historical flow conditions. The report will include monthly flow duration curves, a summary of existing water uses, and a description of potential impacts. Streamflow estimates generated in this task will be used in Task 2.3 to assess impacts of streamflow reductions on salmonids.

**TASK 5 – PROJECT DEVELOPMENT -SH&G AND D.W.ALLEY*****Subtask 5.1 Develop Erosion Control and Habitat Restoration Projects***

Potential erosion control and habitat restoration sites will be identified and assessed using a combination of past reports and new fieldwork. A set of criteria will be developed and utilized to determine the net benefit of each identified site in terms of fish habitat improvements. Projects may include control of streambank erosion, control of upslope/watershed erosion, recommendations to reduce woody debris removal/cutting in important spawning and rearing reaches, barrier modifications and in-channel habitat improvements. The trade-offs between channel improvements and overall reduction of sediment load will be discussed.

Migrational impediments will be re-visited to discuss remedial projects. Impediments will include two barriers in the Gorge, one each on Fall, Newell, Kings, Boulder and Carbonera Creeks, and two barriers on the middle reach of the mainstem. Past survey work on Branciforte and Lompico Creeks will be used to evaluate barriers on these creeks. Future data from the CDFG-funded barrier survey will be utilized to assess previously unidentified barriers.

Previous reports and additional fieldwork will be conducted to assess existing chronic erosion sites. These may include the Mt. Hermon and Love Creek Slides, gully erosion on Bean Creek and McEnery Roads, streambank erosion on Bean and Zayante Creeks, and chronic erosion from various subdivisions in the lower Newell Creek and Scotts Valley area. The grain size of the erosion source and their proximity to the stream environment will be key factors in assessing the importance of each treatment location.

Habitat enhancement sites will be identified based on experience gained from past and current habitat surveys and monitoring efforts. Habitat enhancement strategies will focus on techniques that improve habitat for coho salmon and steelhead. These will include adding cover to deep bedrock pools to enhance coho rearing habitat, introduction of in-stream structural elements and possible development of floodplain and past meander patterns where space allows. Areas of focus will be upper Zayante, lower Boulder and lower Bear Creeks since these areas have the most potential for enhancement.

**Product:** List of potential erosion control and habitat restoration projects, a description of each site and a map identifying each location.

***Subtask 5.2 Prioritize Projects***

Projects will be prioritized by weighing their potential to improve salmonid habitat conditions against the expected cost of the project. Other factors such as the ease of implementation, potential funding sources and stakeholder participation will also be considered. Approximately 5- 10 pilot projects will be designated high priority and included in the design element of this plan. The number of pilot projects included will

depend upon the scope of each individual project and the level of detail. Decisions regarding the number of pilot project will be decided on at a meeting between the County and the Consultant team.

### ***Subtask 5.3 Develop Preliminary Designs***

Preliminary designs and estimated costs will be developed for 5-10 projects. The number of projects will depend on the scale, available background information and design criteria for the projects selected in the previous subtask. Each project site will include a topographic survey of the site, plan view, typical cross-sections, conceptual designs, and cost estimates for project completion.

**Product:** Preliminary designs and cost estimates for the selected projects.

### **TASK 6 – CEQA REVIEW – SH&G AND COUNTY STAFF**

Swanson Hydrology and Geomorphology will work with County Staff to complete initial studies (CEQA initial study checklist) on the Salmonid Restoration Plan (Task 2.4) and proposed habitat improvement projects.

The review process will also include a discussion of the necessary federal, state, and local permits required for implementation of the enhancement alternatives identified in subtask 5.3. Examples of permits, which may be required, include a 404 permit from the U. S. Army Corps of Engineers, California Department of Fish and Game 160 I-03 Streambed Alteration Agreement. In addition to the permits, consultation with U. S. Fish and Wildlife Service and National Marine Fisheries Service regarding federally listed species and designated critical habitat will be required.

**Product:** Initial study checklists.

### **MEETINGS**

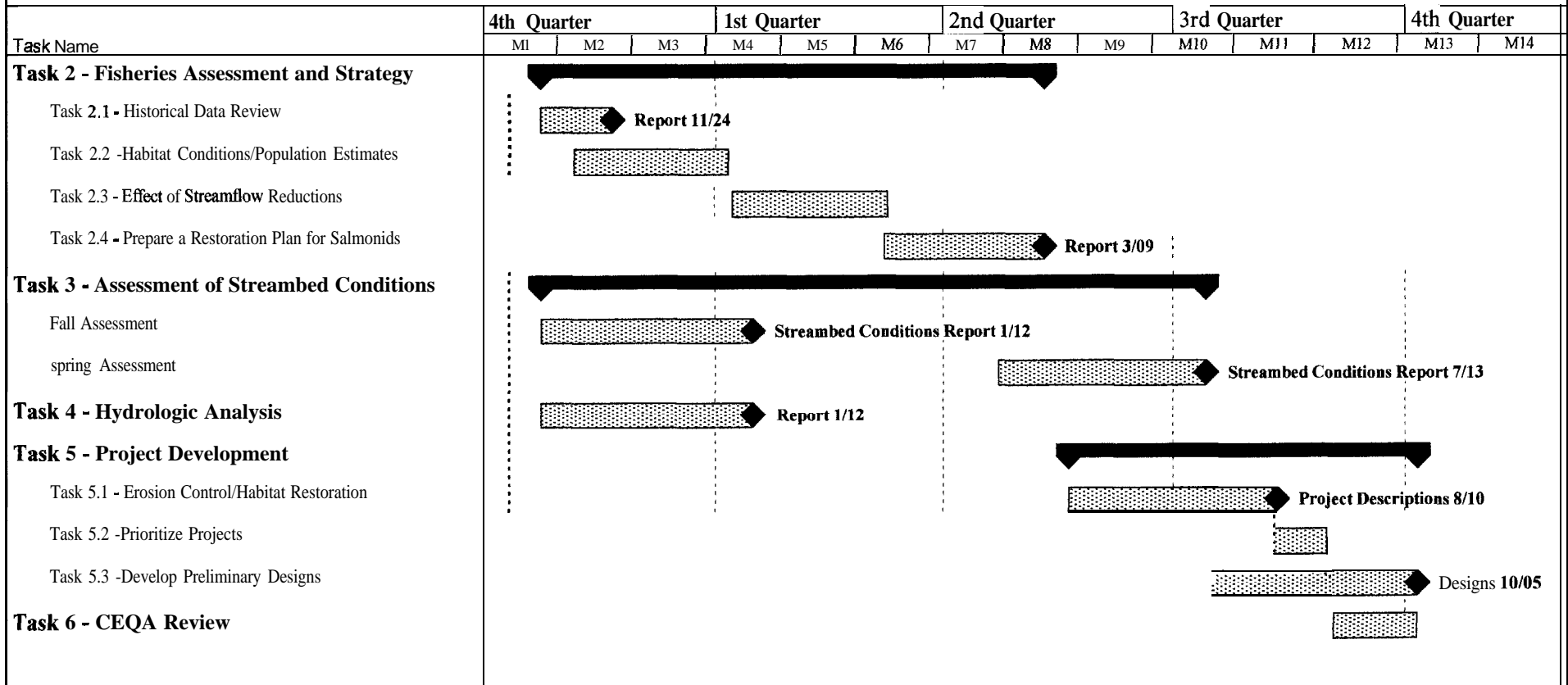
The Consultant Team will attend up to four (4) meetings with the Technical Advisory Committee (TAC) as follows:

- Scope of Work / Field Methodology Meeting
- Draft Restoration Plan for Salmonids
- Final Restoration Plan for Salmonids
- Prioritization of Pilot Habitat Enhancement and Erosion Control Projects



**Proposed Budget to Develop a Fishery Enhancement Strategy for the San Lorenzo River**

	<b>SH&amp;G</b>	<b>D.W. Alley</b>	<b>Jerry Smith</b>	
	Geomorphology/Hydrology Swanson/Dvorsky/Weisner	Fisheries Biologist Don Alley	Fisheries Biologist	Total Labor Costs For Task
Blended Hourly Billing Rate for Firm	85.00	75.00	85.00	
Project Administration	20	4	0	\$2,000
Task Total				\$2,000
Task 2: Fisheries Assessment and Strategy				
Subtask 2.1 Historical Data Review	24	24	0	\$3,840
Subtask 2.2 Habitat Conditions and Population Estimates	10	40	6	\$4,360
Subtask 2.3 Effects of Streamflow Reductions	10	54	6	\$5,410
Subtask 2.4 Prepare a Restoration Plan for Salmonids	48	50	6	\$8,340
Task Total				\$21,950
Task 3: Assessment of Stream and Channel Conditions	200	26	0	\$ 18,950
Task Total				518,950
Task 4: Hydrologic Analysis				
Task Total	88	12	0	\$8,380
				\$8,380
Task 5: Pilot Project <b>Development</b>				
Subtask 5.1 Develop Erosion Control and Habitat Restoration Projects	110	68	20	\$16,150
Subtask 5.2 Prioritize Projects	20	8	0	\$2,300
Subtask 5.3 Develop Preliminary Designs	200	0	0	\$17,000
Task Total				\$35,450
Task 6: CEQA Review (initial study checklist)	72	6	0	\$6,570
Task Total				\$6,570
TAC Meetings	16	16	0	\$2,560
estimated total personnel hours	818	308	38	1,164
<b>estimated labor cost by firm</b>	\$69,530	\$23,100	\$3,230	\$95,860
<b>estimated reimburseable expenses</b>	\$2,000	\$500	\$250	\$2,750
5% subconsultant management charge	\$0	\$1,155	\$162	\$1,317
<b>total cost by firm</b>	\$71,530	\$24,755	\$3,642	
				<b>\$99,927</b>



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