

**AMENDMENT NO. 6
OF
NAPA COUNTY AGREEMENT NO. 130004B (FORMERLY NO. 7837)
PROFESSIONAL SERVICES AGREEMENT**

THIS AMENDMENT NO. 6 OF NAPA COUNTY AGREEMENT NO. 130004B, FORMERLY NO. 7837 is made as of this ____ of _____, 2022 by and between NAPA COUNTY, a political subdivision of the State of California, hereinafter referred to as “COUNTY”, and ESA PWA, LTD. (now ESA), a California corporation, whose mailing address is 550 Kearny Street, #800, San Francisco, CA 94108, hereinafter referred to as “CONTRACTOR”.

WHEREAS, by Napa County Agreement No. 130004B (hereinafter referred to as “Agreement”), COUNTY has engaged the services of CONTRACTOR on September 25, 2012, to provide engineering services for the Final Design Phase of the Napa River Restoration - Oakville to Oak Knoll Reach Project; and

WHEREAS, due to the additional services to be performed by CONTRACTOR identified in Exhibit B-6 attached to this Amendment, the parties agree to increase the maximum amount of compensation by TWO HUNDRED FORTY-FOUR THOUSAND THREE HUNDRED DOLLARS (\$244,300) to a new maximum amount of compensation of FOUR MILLION EIGHT HUNDRED NINETY-SIX THOUSAND FIVE HUNDRED THIRTY-FIVE DOLLARS (4,896,535); and

WHEREAS, the parties now desire to amend the Agreement to modify and add to the Scope of Work and to increase the compensation to reflect such changes;

NOW, THEREFORE, COUNTY and CONTRACTOR hereby amend the Agreement as follows:

1. Paragraph 1 of the Agreement is amended in its entirety as follows:

1. Term of the Agreement. The term of this Agreement shall commence on the date first above written and shall expire on June 30, 2024, unless terminated earlier in accordance with Paragraphs 9 (Termination for Cause), 10 (Other Termination) or 23(a) (Covenant of No Undisclosed Conflict); except that the obligations of the parties under Paragraphs 7 (Insurance) and 8 (Indemnification) shall continue in full force and effect after said expiration date or early termination in relation to acts or omissions occurring prior to such dates during the term of the Agreement, and the obligations of CONTRACTOR to COUNTY shall also continue after said expiration date or early termination in relation to the obligations prescribed by Paragraphs 15 (Confidentiality), 20 (Taxes) and 21 (Access to Records/Retention). The term of this Agreement shall be automatically extended for an additional year at the end of each fiscal year, under the terms and conditions then in effect, unless either party gives the other party written notice of intention not to renew no less than thirty (30) days prior to the expiration of the then current term. Such notice of nonrenewal may be given on behalf of COUNTY by the

Napa County Executive Officer or designee thereof. For purposes of this Agreement, "fiscal year" shall mean the period commencing on July 1 and ending on June 30.

2. Paragraph 2 of the Agreement is amended in its entirety as follows:

2. Scope of Services. CONTRACTOR shall provide COUNTY those services set forth in Exhibit "A-6", attached hereto and incorporated by reference herein.

3. Paragraph 3 of the Agreement is amended in its entirety as follows:

3. Compensation

(a) Rates. In consideration of CONTRACTOR's fulfillment of the promised work, COUNTY shall pay CONTRACTOR at the rates set forth in Exhibit "B-6", attached hereto and incorporated by reference herein.

(b) Expenses. Travel and other expenses will be reimbursed by COUNTY upon submission of an invoice in accordance with Paragraph 4 at the rates and/or in accordance with the policy(s) set forth in Exhibit "B-6" and not to exceed those set by the California Department of Personnel Administration.

(c) Maximum Amount. Notwithstanding subparagraphs (a) and (b), the maximum payment under this agreement shall be a total of FOUR MILLION EIGHT HUNDRED SEVEN SEVEN HUNDRED TWENTY DOLLARS (\$4,807,720) for professional services and EIGHTY-EIGHT THOUSAND EIGHT HUNDRED FIFTEEN DOLLARS (\$88,815) for expenses, for a total contract maximum of FOUR MILLION EIGHT HUNDRED NINETY-SIX THOUSAND FIVE HUNDRED THIRTY-FIVE DOLLARS (4,896,535); provided, however, that such amounts shall not be construed as guaranteed sums, and compensation shall be based upon services actually rendered and expenses actually incurred.

4. Exhibits "A-1", "A-2", "A-3", "A-4", and "A-5" of the Agreement are rescinded and replaced by Exhibit "A-6"; and Exhibits "B-1", "B-2", "B-3", "B-4", and "B-5" of the Agreement are rescinded and replaced by Exhibit "B-6". Exhibits "A-6" and "B-6" are attached hereto and incorporated by reference herein, and all references in the Agreement to Exhibit "A-1", "A-2", "A-3", "A-4", and/or "A-5" and Exhibit "B-1", "B-2", "B-3", "B-4" and/or "B-5", shall mean Exhibit "A-6" and Exhibit "B-6", respectively.

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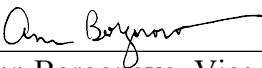
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5. Except as provided in (1), (2), (3), and (4) above, the provisions of the Agreement shall remain in full force and effect as previously approved.

IN WITNESS WHEREOF, COUNTY, and CONTRACTOR have executed this Amendment No. 6 of Napa County Agreement No. 130004B as of the date first above written.

ESA

By 
Christie Beeman, Business Group Director

By 
Ann Borgonovo, Vice President

“CONTRACTOR”

NAPA COUNTY, a political subdivision of
the State of California

By _____
Ryan Gregory, Chair
Napa County Board of Supervisors

“COUNTY”

APPROVED AS TO FORM Office of County Counsel By: <u>John L. Myers (e-sign)</u> Date: <u>January 11, 2022</u>	APPROVED BY THE NAPA COUNTY BOARD OF SUPERVISORS Date: _____ Processed By: _____ Deputy Clerk of the Board	ATTEST: NEHA HOSKINS Clerk of the Board of Supervisors By: _____
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EXHIBIT “A-6”

SCOPE OF WORK

PROJECT DESCRIPTION

The purpose of the project is to prepare the final design documents, regulatory permit applications and assist with construction administration services for the Napa River Restoration Oakville to Oak Knoll Project (Project). The project will progress work already completed for the 9.5 mile reach of the river including the Napa River Sediment Reduction and Habitat Enhancement Plan: Oakville to Oak Knoll (Concept Plan) prepared by the California Land Stewardship Institute with Philip Williams & Associates (now ESA) and the Napa COUNTY Resource Conservation District in April, 2011. The Project will address ‘goals’ of 1) re-establishing floodplain and natural geomorphic and hydrologic processes in the Project reach, 2) reducing fine sediment input, restoring sediment processes and increasing/enhancing fish and riparian habitat, 3) working with landowners to address interests in regards to protecting adjacent agricultural property, and 4) minimizing the need for on-going channel stabilization and repair work by establishing a long-term monitoring and preventative maintenance program. The Project identifies twenty-seven (27) separate high priority restoration treatment areas along the 9.5 miles of river between Oakville Crossroad and Oak Knoll Avenue.

The Project involves production of a series of technical analyses including geotechnical, flood management, geomorphic and ecological studies and preparation of plans (preliminary through final design), specifications and estimates, and permit applications. The planning process will include stakeholder coordination and meetings with Napa COUNTY, landowners including California Department of Fish & Wildlife (Yountville Preserve), regulatory permit and grant agencies.

The Concept Plan will be used as the basis for the Project. A series of Restoration Areas (RAs) are identified in the Concept Plan to achieve the project goals for expanding and enhancing the riparian corridor while reducing sediment and erosion along the river. The RAs include a range of actions ranging from floodplain grading, biotechnical bank stabilization, installation of habitat features and revegetation. The Project will refine and develop restoration actions for each of the proposed Restoration Areas. Refined conceptual designs for all twenty-seven (27) RAs along the entire 9.5 mile, 10-subreach Project will be developed to support ongoing CEQA documentation. The Project final design will be phased based on available funding. Phase 1 of the Project includes final designs for three (3) subreaches along approximately three (3) miles of the Napa River. Final design bidding documents will be organized based on anticipated goals to aggregate construction based on geographic adjacency and other considerations including regulatory constraints (See Table 8.2).

SCOPE OF SERVICES

ESA (CONTRACTOR) will provide necessary technical analyses, project coordination, and design to progress the Concept Plan to support CEQA and develop refined conceptual plans for the Group A, B, C, and D project sites. ESA will provide the necessary technical analyses, project coordination and design to progress the refined conceptual plans to final (100%) designs for the Phase 1 (Group A and Group C) and Phase 2 (Group B and Group D) project sites. CONTRACTOR will conduct site assessments (aquatic and terrestrial) to establish a basis of design to guide design. The basic project approach is to:

- Replace any existing berms at top of bank with new berms set-back from top of bank on either side to increase the riparian corridor width and upland habitat areas;
- Excavate floodplain terraces and alcoves where space allows to support geomorphic processes such as gravel recruitment and increase floodplain habitat and connectivity;
- Regrade and stabilize over-steepened banks to reduce bank erosion;
- Install in-stream structures to increase channel complexity and reduce local velocities to improve fisheries habitat;
- Determine boundaries for adaptive management and vegetated buffers;
- Revegetate disturbed areas and specific enhancement zones with native vegetation.

CONTRACTOR understands that the following relevant work has already been completed for the project reach in pursuit of these goals:

- Napa River Sediment Reduction and Habitat Enhancement Plan: Oakville to Oak Knoll (Concept Plan), 2010, California Land Stewardship Institute with Philip Williams & Associates (now ESA) and the Napa County Resource Conservation District.
- San Francisco Estuary Institute, 2008, Napa River Watershed Historical Ecology Project.
- Koehler, J. 2006. Napa River Salmon Monitoring Project Spawning Year 2005 Report. Napa COUNTY Resource Conservation District.
- Koehler, J. 2007. Fishes of the Napa River Watershed. Napa County Resource Conservation District.
- Napa COUNTY RCD. 2007. Napa River Channel Survey Report, Oakville Cross Road to Oak Knoll Avenue, October 2006 to September 2007. Prepared for California Land Stewardship Institute.
- Stillwater Sciences. 2002. Napa River basin limiting factors analysis. Prepared by Stillwater Sciences and W. Dietrich, Berkeley, California for San Francisco Bay Water Quality Control Board, Oakland, California and California State Coastal Conservancy, Oakland, Final Technical Report.
- Stillwater Sciences. 2005. Napa River Fisheries Monitoring Program Final Report. Prepared for the U.S. Army Corps of Engineers. January.
- USACE. 1998. Napa River/Napa Creek Flood Protection Project: Final Supplemental General Design Memorandum. Napa County Flood Control and Water Conservation District, Napa, CA.
- Napa River Sediment Study (prepared by Mike Napolitano, RWQCB)

This scope of services is for the final design and permitting of the following sites:

- Group A: Reach 10, Restoration Areas 21, 22, 23 (Phase 1)
- Group B: Reach 9, Restoration Areas 15, 17 to 20 (Phase 2)
- Group C: Reach 7, Restoration Areas 11 to 14 (Phase 1)
- Group D: Reaches 2 to 5, Restoration Areas Neverbend, 1 to 4, 7, 9 and 10 (Phase 2)

Site 4 has been expanded to include two (2) additional enhancement sites, 4a and 4b. Site 2 has been divided into two (2) additional sites, 2a and 2b. Also, an additional site, 'Neverbend,' has been added to the project.

In addition to the design and permitting of Phase 1 and Phase 2, the following supplemental tasks are included in this scope of services to support project implementation & construction: 1) Pre-Construction Monitoring; 2) Pre-Construction Surveys; and 3) Bidding and Construction Period Services.

TASK 1. CONCEPT REFINEMENT AND CEQA SUPPORT

The CONTRACTOR shall coordinate with the COUNTY to confirm project goals and objectives including conformance with the TMDL, enhanced floodplain function and riparian corridor expansion, define fisheries habitat requirements and terrestrial habitat enhancement opportunities.

Under this task CONTRACTOR shall develop refined conceptual plans for each of the twenty-seven (27) Restoration Areas defined under Phase 1 and Phase 2. The refined conceptual plans will provide dimensions, descriptions and volumes sufficient to support CEQA review and documentation as well as coordination for preparation of the Biological Assessment for the project. The following subtasks will be completed to produce the refined conceptual plans:

1.1 Field Visits and Concept Review

CONTRACTOR shall coordinate and conduct multidisciplinary reconnaissance-level site visits for Phases 1 and 2. The site visits will be Field assessments will be conducted to 1) characterize the existing habitats (aquatic and terrestrial), 2) evaluate the ecological conditions and features to optimize restoration actions, and 3) assess, evaluate and refine proposed actions at each Restoration Area including determination of proposed instream features outside of proposed RAs. Assessments will be conducted by qualified, recognized experts in the disciplines of geomorphology, design and geotechnical engineering, botany, certified fisheries biologists, herpetofauna (reptiles and amphibians), birds and mammals. The CONTRACTOR's assessment will focus on locations where restoration activities are proposed. This task assumes up to two (2) full days.

1.2 Update Concept Designs

CONTRACTOR shall produce updated concept designs for:

- Phase 1: fourteen (14) RAs including up to three (3) alternatives for Yountville Node
- Phase 2: thirteen (13) RAs

For budgeting purposes CONTRACTOR assumes that the updated conceptual designs will include annotated plans, project features/layout and typical grading sections in figure format for each of the RAs. The plans will be used to support CEQA review and documentation, landowner coordination and the COUNTY's decision-making process.

The updated concept designs will be based on available LiDAR data.

1.3 Habitat Structure Descriptions

CONTRACTOR shall provide narrative descriptions of anticipated construction activities associated typical habitat structures to support CEQA review and documentation. Descriptions will include summary of intended structure function, area estimates for disturbed areas, volume and quantity estimates for excavation and fill activities and equipment used to complete the installations.

1.4 Update Quantities and Costs

Based on the updated concept designs, the CONTRACTOR shall develop updated cost/benefits matrix (*Summary of Restoration Areas*, Page 138, Conceptual Master Plan). CONTRACTOR shall utilize recent experience and expertise with similar relevant restoration projects to provide cost estimates for each of the proposed restoration areas.

1.5 Landowner Review and Feedback

CONTRACTOR shall attend and participate in landowner site visits/meetings coordinated by the COUNTY and California Land Stewardship Institute (Laurel Marcus). The site visits are intended to support landowner review of the updated concept designs and to collect feedback to support ongoing design. In addition, the site visits will be used to confirm landowner support for the proposed actions at each of the RAs. CONTRACTOR assumes one (1) site visit meeting per landowner/property under this task.

TASK 2. LANDOWNER COORDINATION

COUNTY will lead coordination with the landowners, including negotiating setback agreements and Temporary Construction Easements. Any boundary or parcel maps and record documents for the Temporary Construction Easements shall be provided by others. CONTRACTOR's representatives will attend up to twenty-four (24) landowner meetings throughout the Phase 1 final design and four total (4) meetings for the Group B and D 65% design process. For Phase 1 we assume one (1) meeting per landowner at each design submittal which includes 65%, and 90% for Group A and Group C. For Phase 2 (Groups B & D) we assume ten meetings for

Groups B and D 100% design process. These meetings include preliminary design ‘catch-up’ meetings for the new additional sites, Neverbend, 2a, 2b, 4a and 4b. For budgeting purposes, CONTRACTOR assumes up to (24) hours for each landowner meeting including travel and preparation time to support design review and site visits. CONTRACTOR also assumes that the COUNTY will consolidate landowner meetings to the extent possible to make best use of travel and preparation time. CONTRACTOR will also provide one (1) exhibit graphically delineating the limits of temporary construction and access easements for each property owner (up to 9).

2.1 California Department of Fish & Wildlife Coordination

CONTRACTOR will support landowner coordination with California Department of Fish & Wildlife (CDFW) as a separate subtask under Task 2. Based on initial coordination and communication with CDFW, CONTRACTOR understands that specific issues related to the management and maintenance as well as proposed restoration actions at the Yountville Ecological Preserve will require a greater level of effort. For budgeting purposes, CONTRACTOR assumes up to five (5) four (4) hour meetings for each meeting with CDFW staff including travel and preparation time to support design review and site visits.

CONTRACTOR will perform field staking of the approximate limits of the grading areas and vegetated buffers for review by the landowner(s) under Task 3.

TASK 3. TOPOGRAPHIC SURVEY

CONTRACTOR understands that the following topographic and base mapping information is available for the Oakville to Oak Knoll Reach:

- Light detection and ranging (LiDAR) data (1-foot contours)
- Ortho-rectified aerial photographs
- Existing ground survey (transects every 500 feet)
- Existing property boundaries

CONTRACTOR understands that the COUNTY acquired a LiDAR derived digital elevation model for the Oakville to Oak Knoll Reach in 2014 to support the Hydraulic Analysis task. CONTRACTOR assumes no additional floodplain topography is necessary to support floodplain compliance and hydraulic modeling.

CONTRACTOR assumes that any proposed set-back berms will be beyond the tree canopy of the river corridor, and therefore that CONTRACTOR can rely on the LiDAR data for topography for the new berms. However, CONTRACTOR understands that the data has limited accuracy within the river corridor due to dense vegetation and water levels. CONTRACTOR shall use a licensed surveyor to collect additional topographic data and map planimetric features within the proposed restoration areas to supplement the LiDAR data within the project study areas.

CONTRACTOR will establish survey control and place project stationing/staking every 500’ O.C. at top of bank based on the channel thalweg. Station stakes will be placed on both banks of the river channel (22,500 linear feet, approximately) to facilitate the CONTRACTOR’s field reconnaissance and design review and refinement.

CONTRACTOR anticipates collecting topographic ground survey data at specific areas based on the Phase 1 and Phase 2 restoration areas. CONTRACTOR will use updated concept designs to guide the density of survey. For budgeting purposes, CONTRACTOR assumes 300 cross sections varying from 30' - 100' O.C. from the top of the west bank to the top of the east bank over the combined 4 mile (approximately) Phase 1 and Phase 2 reaches to develop project mapping and support detailed design. Topographic survey for Phase 2 includes RAs 20 -17, 10, 9, 7, 4, 4a, 3, 2a, 2b, 1 and Neverbend. CONTRACTOR will rely on County LiDAR to support final design for RAs 15 and 4b (additional survey will be covered under a subsequent amendment if required to support final design).

Planimetric features including major utilities (power poles) and the location, diameter & species of trees greater than 6-inch diameter will be located within the area of survey. Given the project setting, CONTRACTOR assumes that information from the property owners regarding the presence of existing utilities is reliable.

During design development, CONTRACTOR shall also place stakes to define proposed project limits to assist with landowner coordination and project review. Stakes will be placed every 50' O.C. based on proposed grading limits. For budgeting purposes CONTRACTOR assumes a total of 8,000 linear feet of project limit staking on up to twelve (12) properties.

TASK 4. GEOTECHNICAL ANALYSIS

4.1 Detailed Site Reconnaissance and Huichica Field Mapping

CONTRACTOR will conduct a detailed site reconnaissance to: 1) identify and mark (stake) proposed locations for geotechnical borings; 2) identify and map surface exposures of Huichica clay; 3) identify and map features of geotechnical/geologic interest within the Phase 1 restoration areas. Field reconnaissance and mapping efforts will be performed by a two-person team in the combined interest of safety and efficiency. CONTRACTOR anticipates three (3) days onsite to map the entire Oakville to Oak Knoll reach. CONTRACTOR will also each make one (1) site visit during the reconnaissance and field mapping efforts.

4.2 Subsurface Explorations (Borings)

CONTRACTOR will obtain the necessary drilling permits and drill geotechnical borings to explore subsurface conditions at: 1) each of the Phase 1 sites; 2) Site 23; and 3) readily-accessible locations in the area of Sites 1 – 13 (to characterize the depth/elevation of Huichica clay deposits). A tabular summary of the borings included in our base scope of services follows:

Phase	Site(s)	Number of Borings
1a	27 - 29	5
1b	18	5
1c	14 - 17	7
1d	19 - 22	8

Future	23	2
	2 - 13	12
	1	6
<i>Total Number of Borings in Base Scope:</i>		45

(Note: the site numbering above was updated during the project reconnaissance and technical analyses.)

CONTRACTOR assumes that: 1) borings will be completed using truck-mounted auger drilling equipment; 2) unimpeded access to staked boring locations on the days scheduled for the drilling; 3) borings will extend to an average depth of between 20 and 25 feet; 4) the subsurface materials encountered will not include chemical contaminants (i.e. work can safely be performed using Level D personal protective equipment); 5) soil cuttings from the borings can be left onsite; 6) borings will be completed at an average rate of at least 4 per day; and 7) the “as drilled” locations and elevations of borings will be surveyed in by CONTRACTOR. CONTRACTOR will supervise the drilling operations, log the subsurface conditions encountered, and direct the driller to obtain samples at frequent intervals. CONTRACTOR will obtain a permit from the Napa COUNTY Environmental Health Department to drill and grout the borings.

Before drilling, CONTRACTOR will contact Underground Service Alert (USA) to have their member firms locate utilities. The borings could encounter utilities or other buried structures not marked through Underground Services Alert (USA). CONTRACTOR will mark the boring locations prior to drilling so landowner(s) can identify any underground utilities. The cost to repair damage to utilities or other underground facilities not identified by USA is not part of the scope of services or fee estimate unless caused by the negligent actions of CONTRACTOR.

4.3 Laboratory Analysis/Testing and Boring Logs

CONTRACTOR will review the samples and field logs and select appropriate samples for geotechnical laboratory testing. The base scope of services outlined in this proposal assumes that CONTRACTOR will not perform geotechnical laboratory tests in the twenty (20) borings drilled for future planning purposes (i.e. outside of the Phase 1 sites). Following receipt of the laboratory test results, CONTRACTOR will check field classifications of soil type (per ASTM) and prepare drafted versions of the boring logs. The types of laboratory tests performed will depend upon the subsurface materials encountered as well as the technical issues associated with the restoration activities envisioned at the boring/sample location.

4.4 Geotechnical and Geologic Characterization

CONTRACTOR will analyze and interpret the data from field mapping, borings and laboratory tests and survey data to characterize: 1) geotechnical conditions at the Phase 1 sites; and 2) the elevation of the upper surface of Huichica clay deposits where observed/encountered in mapping and/or borings. For Phase 1 areas, CONTRACTOR’s services include developing interpretive cross sections (transverse to the thalweg, intersecting a boring) at key locations in areas where restoration activities are anticipated. For Huichica mapping, CONTRACTOR shall utilize the

topographic base map and survey data to prepare a map depicting: 1) the Huichica clay outcrops/exposures mapped during reconnaissance; 2) boring locations with the elevation of the top of the Huichica clay (where encountered) or the bottom of the boring (where absent); and 3) interpreted elevation contours of the top of the Huichica clay where supported by substantiating data.

4.5 Geotechnical Engineering Analyses

CONTRACTOR shall conduct geotechnical engineering analyses, where appropriate, to: 1) evaluate slope stability (creek banks and berms); 2) assess geologic/seismic hazards (ground shaking, fault rupture, liquefaction, lateral spreading, seismic slope stability); and 3) develop recommendations for the geotechnical engineering aspects of the project. The analyses performed will depend upon the conditions encountered, the data acquired and technical issues associated with the restoration activities envisioned.

4.6 Draft Geotechnical Report

CONTRACTOR shall prepare and submit a draft geotechnical investigation report to the COUNTY that: 1) discusses methods of investigation; 2) describes the site conditions encountered; 3) presents conclusions and evaluations pertaining to the planned channel modifications, berms, geologic hazards, and other geotechnical aspects of the future work; and 4) presents geotechnical recommendations for planned Phase 1 improvements, including site preparation, earthwork, berm design, surface drainage, maintenance and future geotechnical services. The geotechnical report will include figures that illustrate key elements of the text, a location map, site plans showing the locations of borings and cross sections, interpretive cross sections, and strip maps presenting the results of Huichica mapping.

4.7 Post-Report Design Reviews and Report Finalization

CONTRACTOR shall provide post-report design reviews to support design development of 30%, 65%, 90%, and 100% deliverables for Phase 1 and Phase 2. CONTRACTOR shall provide post-report design reviews to support design development of the 65%, Phase 2 project sites. CONTRACTOR shall also finalize the project geotechnical investigation report to respond to COUNTY comments and that is consistent with the 100% design documents.

TASK 5. HYDRAULIC MODELING

CONTRACTOR will construct a HEC RAS hydraulic model for Phase 1 and Phase 2 of the Oakville Oak Knoll Project. CONTRACTOR will supplement the Phase 1 and Phase 2 HEC-RAS model with detailed site topography and proposed project conditions to support Final Design analyses and floodplain compliance (Subtask 5.2). CONTRACTOR assumes some efficiency will be realized by using the same model for Subtask 5.1 and Subtask 5.2

5.1 Hydraulic Analysis

The estimated budget for the hydraulic analysis task is based on the following assumptions:

- The CONTRACTOR shall construct a steady-state HEC-RAS hydraulic model for existing conditions using available LiDAR and topographic data acquired as part of this contract.
- Hydrologic analysis has already been performed and reviewed by others (USACE and FEMA). CONTRACTOR shall utilize hydrologic data established for the Concept Plan, already documented by FEMA in the adopted Napa County Flood Insurance Study (FIS), and analysis of available stream gage data as input to the hydraulic model.
- To confirm project hydrology data (USACE or FEMA), CONTRACTOR shall coordinate with the COUNTY to 1) confirm COUNTY direction related to available data, if any; 2) determine if FEMA has reviewed the USACE hydrologic analysis and accepted it, or not; 3) determine FEMA requirements in terms of backup data to go with the USACE written report, and whether or not data is available to the CONTRACTOR.
- CONTRACTOR will update the existing conditions model and develop a Design Condition scenario using design grade contours for each restoration site and available LiDAR. During Preliminary Design (Task 7), CONTRACTOR may perform analyses of the Design Conditions to reflect and support refinements.
- Prepare up to six (6) floodplain compliance documents for floodplain grading permit as follows:
 - Group A: RAs 23, 22, & 21 – County No Rise Certification
 - Group C: RAs 14 – County No Rise Certification
 - Group C: RAs 13, 12, & 11 – County No Rise Certification
 - Group B: RAs 20-17, & 15 – County No Rise Certification
 - Group D: RAs 10, 9, 2a, 2b, & 1 – County No Rise Certification
 - Group D: RAs 7, 4, 4a, 4b, 3, & Neverbend – County No Rise Certification
- During Detailed Design (Task 8), CONTRACTOR will update the Design Conditions model to reflect the final design, at the level of detail needed to obtain hydraulic parameters for design calculations.
- CONTRACTOR shall utilize a 2-d model and modeling results completed under the Concept Plan to perform aquatic habitat assessments. In addition, CONTRACTOR may utilize 2-d model analysis to evaluate potential habitat conditions under typical design scenarios. This analysis will be used to inform design components.
- CONTRACTOR will prepare a brief memorandum and description documenting the predicted 100-year water surface elevation for Design Conditions that will be included in the CLOMR or No Rise submittal.

5.2 Floodplain Compliance Modeling

The proposed project includes grading within a FEMA special flood hazard area (SFHA) and floodway of the Napa River. Therefore, the project requires County grading permits prior to implementation. Grading permits within SFHAs require detailed hydraulic analyses to verify existing and post project flood elevations.

Under Task 5.2 CONTRACTOR shall obtain and review available FEMA model files and COUNTY provided model input and output files to compile a digital version of the

Effective model for the Oakville to Oak Knoll project reach. This Duplicate Effective model will be compared against pre-project and post-project design conditions to determine if a “No Rise” or “Conditional Letter of Map Revision (CLOMR)” is the appropriate floodplain compliance approach for each group.

Where Post-Project flood elevations are higher than Pre-Project flood elevations, CONTRACTOR will develop and document a CLOMR application in accordance with FEMA Form 086-0-27A (Riverine Hydrology and Hydraulics Form) and Form 086-0-27B (Riverine Structures Form) as described below.

Where Post-project flood elevations are lower than either Pre-Project flood elevations or the Duplicate Effective flood elevations, CONTRACTOR will develop and document a No Rise certification in accordance with COUNTY and FEMA standards.

The CLOMR and No Rise process have several formal steps that must be carried out and documented including:

5.2.a. Develop “Duplicate Effective Model”

The Effective Model will be obtained and reproduced in HEC-RAS. The Duplicate Effective Model is not a pre-project conditions model; it reflects the topography and inputs at the time the Effective Model was created and is developed as a form of Quality Control for FEMA. The Duplicate Effective Model must be run to show that it predicts Base Flood Elevation (the 100-year flood) within 0.5 feet of that predicted by the Effective Model at each cross section before being modified to assess the project.

5.2.b. Develop Pre-Project Conditions Model

This step makes any needed changes to the topography of the Duplicate Effective Model to reflect existing conditions. CONTRACTOR will develop this model as part of Task 5. The model is run with the 100-year flood flow and any changes in flood elevation or extent are noted. Note that any changes made to the Duplicate Effective Model will likely need to be based on surveys performed and certified by a licensed professional surveyor.

5.2.c. Post-Project Conditions Model

CONTRACTOR shall modify the Pre-Project Conditions model to reflect the 90%-complete design condition for the Phase 1 project, assuming the roughness of the anticipated mature riparian canopy. CONTRACTOR will run the 100-year flood flow through the Post-Project Conditions model and will record any changes in flood elevation or extent relative to Pre-Project Conditions. CONTRACTOR understands that the COUNTY’s goal is for no net rise in water surface elevation during the 100-year flood.

5.2.d. Complete CLOMR or No Rise Application

Based on the results of the hydraulic modeling described above, CONTRACTOR shall complete up to six (6) No Rise certifications for the COUNTY for Group A (RAs 23, 22, & 21), Group C (RAs 14, 13, 12 & 11), Group B (RAs 20-17, 15), Group D (RAs 10, 9, 2a, 2b, 1, and Neverbend) and Group D (RAs 7, 4, 4a, 4b, & 3). If a CLOMR is required CONTRACTOR assumes that CONTRACTOR will serve as the CLOMR Requestor and provide the Engineer's certification, and that the "community official responsible for floodplain management" signature will be provided by the COUNTY. CONTRACTOR shall complete the required forms and provide the necessary documentation, maps and figures electronically. CONTRACTOR will meet with the COUNTY to present the results prior to submitting the application to FEMA. We have budgeted up to six (6) meetings for this task.

5.3 Rutherford LOMR

CONTRACTOR will review the modeling approach and assumptions used for the CLOMR application and develop a LOMR application for the portion of the Napa River Restoration Rutherford Reach Project that has been constructed between Zinfandel Lane and Rutherford Road.

5.3.a. Review CLOMR Application

CONTRACTOR will perform a preliminary review of project materials including the CLOMR application and as-built drawings in preparation for a kick-off meeting with the client team. The CONTRACTOR will conduct a kick-off meeting with COUNTY staff including those responsible for FEMA floodplain management. The purpose of this meeting will be to verify the goals of the CLOMR review and LOMR application and identify any specific concerns regarding floodplain mapping, modeling approach, or the FEMA map revision process. CONTRACTOR anticipates combining this meeting with a reconnaissance visit to familiarize CONTRACTOR's technical staff with the project site.

CONTRACTOR will then review the CLOMR application in detail including HEC RAS modeling approach, assumptions and results, focusing particularly on the approach used to allocate in-channel vs floodplain flows and treatment of existing berms. We will attempt to contact the consultants, including specific individuals, who developed the CLOMR application and meet with them to glean additional insight into the modeling approach and assumptions. CONTRACTOR will document this review in a draft technical memorandum to the County, which will also include our recommendations regarding possible changes to the approach that may be applied to the LOMR application (if any). CONTRACTOR will finalize the technical memorandum based on one set of review comments from COUNTY staff. This task also provides for one meeting to discuss the results of the review.

5.3.b. Hydraulic Analysis

FEMA requires several formal steps for hydraulic analysis to support the LOMR application (Form 086-0-27A Riverine Hydrology and Hydraulics). Our proposed

approach for each step is described below. This scope assumes that no analysis or further documentation will be required to support Form 086-0-27B (Riverine Structures Form), based on the approach used in the CLOMR application.

5.3.b.1. Duplicate Effective, Corrected Effective, and Existing Conditions Models

The *Duplicate Effective Model* reflects the topography and inputs at the time the Effective Model was created and is developed as a form of Quality Control for FEMA. The Duplicate Effective Model must be run to show that it matches Base Flood Elevation (BFE, aka 100-year flood elevation) within 0.5 feet of Effective Model BFEs at each cross section before being modified to assess the project. CONTRACTOR will obtain and run the Duplicate Effective Model developed for the CLOMR application, perform a quality control check, and verify that the results are consistent with the current Effective Model. This task was scoped as a verification review of the existing model, and the budget assumes that no major refinements will be required to incorporate this model into the LOMR submittal.

The *Corrected Effective Model* reflects changes to the topography that may not be reflected in the Effective Model. The base flood is run and any changes in flood elevation or extent relative to the Effective Model are recorded. At this stage, the CONTRACTOR may choose to incorporate changes to the modeling based on the results of Task 1. In addition to updated topography, the *Existing Conditions* model includes structures that may have been built since the time of the Effective model. Any adjustments made to the *Corrected Effective Model* will be extended to the *Existing Conditions* model to establish a new existing conditions baseline from which to model the new, post-project conditions for the purposes of the LOMR.

This scope of work assumes a moderate level of effort for updating the *Corrected Effective* and *Existing Conditions Models* developed for the CLOMR to reflect adjustments identified in Task 1. If significant modifications are required, the CONTRACTOR will revise the budget allocated for this task and obtain approval from the County prior to undertaking the revised scope (see Task 5.3 Additional Services).

5.3.b.2 Post-Project Conditions Model

CONTRACTOR will modify the *Existing Conditions Model* to reflect the project as constructed. Cross sections within the restored reach will be modified to reflect as-built conditions, based on as-built documentation provided by the COUNTY. We will evaluate the 100-year and 500-year floodplains as well as the floodway relative to the current effective FIRM and document any changes in flood elevation or extent as required by the FEMA LOMR application process. The CONTRACTOR assumes that the CONTRACTOR will be provided with as-built topography certified by a registered Civil Engineer for the basis of the post-project conditions model and that additional survey will not be required to reflect constructed conditions.

5.3.b.3 Floodplain mapping

CONTRACTOR will use the results of the hydraulic models to develop updated inundation extents in GIS for post-project conditions for the 100-year Base Flood and Floodway, and 500-year hazard areas. Model results will be overlaid with design topography to delineate these extents and they will be tied into FEMA's effective geospatial data from the Digital Flood Insurance Rate Map database for Napa County.

5.3.c Complete LOMR Application

Based on the results of Task 5.3.b, CONTRACTOR will complete a LOMR application to FEMA. CONTRACTOR assumes that CONTRACTOR will serve as the LOMR Requestor and provide the Engineer's certification, and that the "community official responsible for floodplain management" signature will be provided by the COUNTY. CONTRACTOR will complete the required forms and provide the necessary documentation, maps and figures. CONTRACTOR anticipates following a similar outline to the CLOMR application for consistency and ease of review by FEMA. The budget for this task includes approximately 8 hours of staff time to respond to one set of comments from FEMA. The LOMR submittal fee of \$8,000 is included as a reimbursable expense in Exhibit B-6 below.

The level of effort required to complete the LOMR application to the satisfaction of the FEMA reviewer is difficult to precisely estimate. Task 5.3 provides additional budget that may be authorized by the COUNTY to cover unanticipated effort to complete the LOMR application and/or respond to FEMA comments. We will revise the budget allocated for this task and obtain approval from the COUNTY prior to undertaking any work under the Task 5.3 Additional Services budget.

5.3.d. Rutherford LOMR Additional Services

CONTRACTOR will provide the scope of work described under Task 5.3 on a time and materials basis with a total budget not to exceed \$71,800.00 without prior written consent of the COUNTY (see Exhibit B-6). As it is difficult to estimate the level of effort that may be required to update previous modeling, mapping and documentation to support the LOMR application, we propose including a specific allowance of \$15,000 for additional services that may be required in the course of this project. This allowance would only be accessed with prior written approval by the COUNTY.

TASK 6. ENGINEERING BASIS OF DESIGN REPORT

Based on experience with regulatory agencies in the Rutherford Reach project CONTRACTOR shall develop a project engineering basis of design report (BoD) to document the rationale of key project features within Phase 1 and Phase 2 to support coordination with the regulatory agencies. The BoD will summarize project elements and intended function as well as other aspects of the project such as fisheries assessments and terrestrial habitats. The report will be updated and finalized through findings of technical analyses, design phases and refinements (90% design) and input from the regulatory agencies.

CONTRACTOR will undertake the following tasks as needed:

- Review and confirm intended function of restoration elements from the Concept Plan. CONTRACTOR assumes engineering basis for inset floodplain and alcove features, secondary channels, grade control and roughened channel structures, instream habitat elements such as large wood structures and boulder clusters and biotechnical stabilization. In addition, boundaries for setback berms and vegetated buffers will be described.
- Establish engineering basis of design for the project reach in the context of the wider river system. CONTRACTOR shall review SFEI's Napa Valley Historical Ecology Report to identify historic channel function, subsequent channel evolution and lost functions within the project reach. CONTRACTOR shall identify features that may be modified in the preliminary design to better reflect those lost functions (e.g. alcoves).
- CONTRACTOR shall estimate the equilibrium slope for the project reach, which would serve as the basis for recommending height and spacing of proposed grade control structures. (Note that this evaluation will be supported by the 2007 thalweg survey and supplemented by additional detailed survey completed under Task 2.)
- CONTRACTOR shall review the available sediment budget information to assess whether the proposed grade control structures and bed raising structures are appropriate as proposed. For example, if the volume of gravel to be trapped by the structures is high relative to the gravel budget at the reach we will consider reducing or eliminating structures to raise the channel bed. In addition, CONTRACTOR shall consider findings developed under separate Napa River gravel augmentation studies to inform rationale.
- CONTRACTOR shall conduct fisheries assessment and outline restoration area features. This includes the identification and quantification of elements the project will achieve to create and enhance habitat function.
- Using available and relevant literature and field observations of channel conditions, CONTRACTOR shall evaluate and provide estimates for anticipated channel evolution and lateral migration. Based on these evaluations CONTRACTOR shall develop recommendations for consideration of and guidance for managed retreat zones within the study area (Site 15).

TASK 7. 30%-COMPLETE PRELIMINARY DESIGN (PHASES 1 AND 2)

CONTRACTOR will produce the 30%- complete preliminary design for Phase 1 and Phase 2. Based on work performed under previous tasks, CONTRACTOR will proceed with development of the 30%-complete preliminary design, including, if needed, confirming that the design is consistent with Floodplain compliance applications (see Task 5). The 30%-complete preliminary design will be based on existing available LiDAR provided by the COUNTY. CONTRACTOR will also update the preliminary construction cost estimate for Phase 1 based on 2012 bid results. Upon approval from the COUNTY, the 30%-complete preliminary design will serve as the basis for evaluation and final design project definition. The 30% plans will illustrate aquatic and terrestrial habitat restoration elements to support permitting (USACE) and completion of the Biological Assessment and Biological Opinion. Revegetation and vegetation management plans shall be developed under subsequent phases of design.

CONTRACTOR has estimated the level of effort for the 30%-complete preliminary design based on recently completed work on other phases of the Rutherford Reach project. CONTRACTOR assumes that the design for Phases 1 and 2 will progress the main elements for each of the twenty seven (27) restoration areas outlined in the refined conceptual plans developed under Task 1 and listed below:

- Approximately 59 acres of restored floodplain and riparian areas
- Vineyard setbacks including new vineyard roads for vegetated buffer/passive retreat (5,900 lf)
- Floodplain benches and secondary channels on west and east banks (up to approx. 5,400 lf)
- Select revegetation of floodplain and bank elements on west and east banks (48 acres, approximately)
- Floodplain bench stabilization – willow baffles and other biotechnical elements
- Bank grading and stabilization
- In-stream structures – boulder grade control and roughened channel structures (up to 4); large wood (up to 45); low profile wood structures (up to 36); boulder clusters (30) (based on previous input from NOAA Fisheries)

The total linear extent of the floodplain grading and/or the vineyard setbacks for vegetated buffers in Phases 1 and 2 may be reduced as part of the design refinements to optimize function and limit impacts to existing vegetation.

CONTRACTOR will provide one (1) progress draft submittal for review and comment by the COUNTY. The submittal will include drawings and cost estimates developed to appropriate levels of completion. For budgeting purposes we assume the 30% preliminary design submittal will include title sheet, annotated plans, project features/layout, typical grading sections and detail for all elements on all properties. The plans will be used to support landowner coordination (Task 2) and COUNTY decision-making process. CONTRACTOR will provide an estimate of tree removals based on field observation.

Design drawings will consist of the following provisional sheet list; the actual list of drawings will be refined as the design develops.

Title Sheet, General Notes, Vicinity & Location Maps, Abbreviations, Legend, List of Drawings	1	ESA PWA
Grading (terraces and limits) and Channel Improvements Plans	7	ESA PWA
Terrace Grading Sections (assume three per grading area)	5	ESA PWA
Typical Details: Bank Stabilization and Habitat Structures	3	ESA PWA
Estimated Total:	16	

TASK 8. FINAL DESIGN

CONTRACTOR shall progress the 30%-complete preliminary design to final design level. The CONTRACTOR understands that projects within the original design phases have been reorganized into four (4) separate groups (Table 8.1) to account for geographic location, ownership patterns, environmental constraints, permitting, and anticipated project cost.

Table 8.1

Construction Group	Restoration Area (RA)*
A	23, 22, 21
B	20, 19, 18, 17, 15
C	14, 13, 12, 11
D	10, 9, 7, 4, 4a, 4b, 3, 2a, 2b, 1, Neverbend

The order of implementation and phasing of Final Design depends on available grant funding, landowner involvement, and other site-specific factors. As such, the CONTRACTOR understands that particular RAs are likely to be funded and implemented in phases As part of this Final Design scope of work, the CONTRACTOR will produce final design plans, specifications, and cost estimates under Task 8a through 8e for RAs listed in Table 8.2. Optional tasks can be initiated and/or modified at the request of the COUNTY if the actual sequencing of projects changes significantly.

Table 8.2

Construction Group	Task	Restoration Areas (RA)	PS&E Bid Package	Design Level
A	8a	23, 22, 21	1	100%
C	8b	14, 13, 12, 11	2 & 3	100%
B	8c	20, 19, 18, 17, 15	4	100%
D	8d	10, 9, 2a, 2b, & 1	5	100%
D	8e	7, 4, 4a, 4b, 3, & Neverbend	6	100%

CONTRACTOR will advance the refined preliminary design to final 100% design documents (drawings, technical specifications and cost estimates) for as six (6) separate bid packages (Table 8.2). In addition, the CONTRACTOR assumes that revegetation, vegetation management, and

irrigation components will be developed as stand-alone bid packages for each of the four construction groups. Based on the 30%-Complete Preliminary Design, CONTRACTOR has assumed that select non-native vegetation removal is required on all sites, although the COUNTY is currently pursuing a range of vegetation management projects. CONTRACTOR will develop and provide design documents for revegetation and irrigation elements (drawings, technical specifications and cost estimate) for construction groups listed in Table 8.2.

CONTRACTOR will provide progress design submittals at the 65%- and 90%-completion levels for review and comment by the COUNTY. Each submittal will include drawings, specifications, and cost estimates developed to appropriate levels of completion. CONTRACTOR will submit outline technical specifications with the 65% submittals, and draft technical specifications and a list of Bid Items at the 90% submittal. The final design submittal will consist of the following:

- Final signed and stamped drawings
- Technical specifications (following the COUNTY's format)
- List of bid items
- Engineer's estimate of likely construction costs
- Proposed construction schedule
- Register of submittals

CONTRACTOR assumes the following elements/services are not needed/not included/will be provided by others for all final design packages:

- Special handling of excavated soils due to chemical concentrations
- Utility locating (except as described in Task 3) and any utility relocations
- Preparation of Division 0 and 1 documents (Instructions to Bidders, Contract, General Conditions, General Requirements, etc.)

CONTRACTOR will incorporate appropriate language in the specifications to describe the contractor's responsibility for developing a Storm Water Pollution Prevention Plan (SWPPP) to comply with the current NPDES Construction General Permit (Clean Water Act Section 402). CONTRACTOR assumes that the COUNTY can provide the SWPPP prepared for the Rutherford Reach projects as a sample document in Word format to facilitate plan development and approval, and will submit the NOI, site map and associated fees to the State Water Resources Control Board prior to the start of construction.

8 A Final Design: Group A – Restoration Areas 23, 22, & 21

CONTRACTOR will provide submittals for Group A RAs 23, 22, and 21 as a single comprehensive bid package. The CONTRACTOR has estimated the level of effort required for final design based on the following project elements at each site:

Task 8a – Final Design Group A			
Design Feature	RA 23	RA 22	RA 21
Total Earthwork (cy)	11,500	14,500	12,400
Biotechnical Bank Stabilization (lf)	270	425	700

Floodplain Bench Stabilization (willow baffles, brush mats, etc)	7	7	5
Set-Back Berms (lf)	0	420	0
Large Wood Structures	8	0	25
25' Wide Vineyard Access Roads (lf)	290	380	700
Roughness Boulders	0	1	4
Flood Bench/Alcove	2	1	0
Revegetation & Erosion Control (acres)	1.3	2.2	1.2
Vegetation Management (acres)	0.1	0.5	0.4

The total extent of grading and/or project elements in construction Group A RA 23, 22, & 21 may change during final design development and refinement.

Design drawings included in the submittal will consist of the following preliminary sheets; the actual list of drawings will be refined as the design develops.

Task 8a – Preliminary Sheet List (RAs 23, 22, & 21)		
Sheet Description	Sheets	Lead
Title Sheet, General Notes, Vicinity & Location Maps, Abbreviations, Legend, List of Drawings	1	ESA PWA
General Notes and Survey Control	2	ESA PWA
Site Plan, Including Staging Area, Access Routes, and Sheet Key	2	ESA PWA
Demolition & Protection Plan	2	ESA PWA
Grading & Improvements Plan	2	ESA PWA
Grading Sections	3	ESA PWA
Typical Sections and Details	3	ESA PWA
In-stream Structure Details	3	ESA PWA
Bank Protection Details	2	ESA PWA
Floodplain Stabilization Details	2	ESA PWA
Revegetation and Irrigation Plan	4	RR
Plant List, Planting, and Irrigation Details	3	RR
Estimated Total:	29	

8 B Final Design: Group C – Restoration Areas 14, 13, 12, & 11

CONTRACTOR will provide submittals for the Group C RAs 14, 13, 12 and 11 as two bid packages. The CONTRACTOR has estimated the level of effort required for final design based on the following project elements at each site:

Task 8b – Final Design Group C				
Design Feature	RA 14	RA 13	RA 12	RA 11
Total Earthwork (cy)	119,300	63,000	17,400	2,600

Biotechnical Bank Stabilization (lf)	2,000	1,500	550	0
Floodplain Bench Stabilization (willow baffles, brush mats, etc)	0	34	8	0
Set-Back Berms (lf)	3,000	0	0	0
Large Wood Structures/Large Wood Structure Complexes	0/13	6\6	2/2	0
25' Wide Vineyard Access Roads (lf)	3,000	0	0	0
Roughness Boulders	24	11	2	0
Flood Bench/Alcove	1	11	1	0
Revegetation & Erosion Control (acres)	11.3	10.6	1.7	2.1
Vegetation Management (acres)	0.6	1.8	0.4	0.5

The total extent of grading and/or project elements in construction Group C may change during final design development and refinement.

Design drawings included in the submittal will consist of the following preliminary sheets; the actual list of drawings will be refined as the design develops.

Task 8b – Preliminary Sheet List (RAs 14, 13, 12 & 11)		
Description	Sheets	Lead
Title Sheet, General Notes, Vicinity & Location Maps, Abbreviations, Legend, List of Drawings	1	ESA PWA
General Notes and Survey Control	2	ESA PWA
Site Plan, Including Staging Area, Access Routes, and Sheet Key	6	ESA PWA
Demolition & Protection Plan	6	ESA PWA
Grading & Improvements Plan	6	ESA PWA
Grading Sections	10	ESA PWA
Typical Sections and Details	5	ESA PWA
In-stream Structure Details	5	ESA PWA
Bank Protection Details	4	ESA PWA
Floodplain Stabilization Details	4	ESA PWA
Revegetation and Irrigation Plan	12	ESA PWA
Plant List, Planting, and Irrigation Details	4	ESA PWA
Estimated Total:	65	

8 C Final Design: Group B – Restoration Areas 20, 19, 18, 17, & 15

CONTRACTOR will provide the final design submittals for the Group B RAs 20, 19, 18, 17, and 15 as a single comprehensive bid package. The CONTRACTOR has estimated the level of effort required for final design based on the following project elements at each site:

Task 8c – Final Design Group B					
Design Feature	RA 20	RA 19	RA 18	RA 17	RA 15
Total Earthwork (cy)	6,000	24,000	1,000	11,500	14,000
Biotechnical Bank Stabilization (lf)	300	620	175	375	0
Floodplain Bench Stabilization (willow baffles, brush mats, etc)	0	8	0	6	0
Set-Back Berms (lf)	0	0	0	0	0
Large Wood Structures		8	0	3	0
25' Wide Vineyard Access Roads (lf)	800	600	300	0	2,000
Roughness Boulders		6	0	2	0
Flood Bench/Alcove	1	1	0	1	0
Revegetation & Erosion Control (acres)	1.7	2.7	0.4	1.2	4.8
Vegetation Management (acres)	2.4	0.2	0.2	0.2	6.2

The total extent of grading and/or project elements in construction Group B may change during final design development and refinement.

Design drawings included in the submittal will consist of the following preliminary sheets; the actual list of drawings will be refined as the design develops.

Task 8c – Preliminary Sheet List (RAs 20, 19, 18, 17, & 15)		
Description	Sheets	Lead
Title Sheet, General Notes, Vicinity & Location Maps, Abbreviations, Legend, List of Drawings	3	ESA PWA
Survey Control	2	ESA PWA
Site Plan, Including Staging Area, Access Routes, and Sheet Key	1	ESA PWA
Existing Conditions Plans	6	ESA PWA
Grading & Improvements Plan	5	ESA PWA
Grading Profiles	2	ESA PWA
Enhancements Plan	6	ESA PWA
Typical Sections and Details	14	ESA PWA
In-stream Structure Details	1	ESA PWA
Floodplain Stabilization Details	7	ESA PWA
Estimated Total:	47	

8 D Final Design: Group D – Restoration Areas 10, 9, 2a, 2b, & 1

CONTRACTOR will provide the submittal for the Group D RAs 10, 9, 2a, 2b, and 1 as a single comprehensive bid package. Under this task CONTRACTOR will ‘catch up’, update and progress 30% designs from Task 7 at RA 2 and RA 1 to final design based on recent landowner coordination and input as well as integration with other sites. The CONTRACTOR has estimated the level of effort required for final design based on the following project elements at each site:

Design Feature	RA 10	RA 9	RA 2A	RA 2B	RA 1
Total Earthwork (cy)	48,000	24,100	8,000	9,000	15,000
Biotechnical Bank Stabilization (lf)	550	105	150	100	300
Floodplain Bench Stabilization (willow baffles, brush mats, etc)	7	7	2	2	4
Set-Back Berms (lf)	0	0	0	0	0
Large Wood Structures	16	17	4	2	3
25’ Wide Vineyard Access Roads (lf)	0	0	500	350	1,200
Roughness Boulders	7	4	0	0	0
Flood Bench/Alcove	1	1	0	1	1
Revegetation & Erosion Control (acres)	4.6	2.8	0.8	0.7	1.6
Vegetation Management (acres)	0.8	1.1	0.5	0.5	1

The total extent of grading and/or project elements in construction Group D may change during final design development and refinement.

Design drawings included in the submittal will consist of the following preliminary sheets; the actual list of drawings will be refined as the design develops.

Task 8d – Preliminary Sheet List (RAs 10, 9, 2a, 2b, & 1)		
Description	Sheets	Lead
Title Sheet, General Notes, Vicinity & Location Maps, Abbreviations, Legend, List of Drawings	2	ESA PWA
General Notes and Survey Control	3	ESA PWA

Site Plan, Including Staging Area, Access Routes, and Sheet Key	4	ESA PWA
Demolition & Protection Plan	4	ESA PWA
Grading & Improvements Plan	4	ESA PWA
Enhancements Plan	4	ESA PWA
Typical Sections and Details	5	ESA PWA
In-stream Structure Details	2	ESA PWA
Floodplain Stabilization Details	2	ESA PWA
Estimated Total:	26	

8 E Final Design: Group D– Restoration Areas 7, 4, 4a, 4b, 3, & Neverbend

Formerly Task 8e – Group A (7, 4, & 3): 65% Design, CONTRACTOR will provide final design submittals for the Group D RAs 7, 4, 4a, 4b, 3 and Neverbend as a single comprehensive bid package. Under this task CONTRACTOR will ‘catch up’, update and advance designs at newly added (from Task 7) restoration areas 4a, 4b and Neverbend to final design based on recent landowner coordination and input as well as integration with other sites. The CONTRACTOR has estimated the level of effort required for final design based on the following project elements at each site:

Design Feature	RA 7	RA4	RA4A	RA 4B	RA 3	Neverbend
Total Earthwork (cy)	3,900	1,500	4,000	0	17,300	16,000
Biotechnical Bank Stabilization (lf)	80	0	400	0	270	200
Floodplain Bench Stabilization (willow baffles, brush mats, etc)	0	0	2	0	4	5
Set-Back Berms (lf)	1	0	0	0	0	0
Large Wood Structures	0	4	1	0	4	4
Vineyard Access Roads (lf)	150	300	160	1,400	0	400
Roughness Boulders	0	0	2	0	0	2
Flood Bench/Alcove	0	0	0	0	1	2
Revegetation & Erosion Control (acres)	1.0	0.8	1.2	0.8	2.3	2
Vegetation Management (acres)	0.1	3.3	0.1	0.8	0.3	0.8

The total extent of grading and/or project elements in construction Group D may change during final design development and refinement.

Design drawings included in the submittal will consist of the following preliminary sheets; the actual list of drawings will be refined as the design develops.

Task 8e – Preliminary Sheet List (RAs 7, 4, 4a, 4b, 3 & Neverbend)		
Description	Sheets	Lead
Title Sheet, General Notes, Vicinity & Location Maps, Abbreviations, Legend, List of Drawings	2	ESA PWA
General Notes and Survey Control	3	ESA PWA
Site Plan, Including Staging Area, Access Routes, and Sheet Key	4	ESA PWA
Demolition & Protection Plan	4	ESA PWA
Grading & Improvements Plan	4	ESA PWA
Enhancements Plan	4	ESA PWA
Typical Sections and Details	5	ESA PWA
In-stream Structure Details	2	ESA PWA
Floodplain Stabilization Details	2	ESA PWA
Estimated Total:	30	

Revegetation Design: Group A, Group B, Group C and Group D

Formerly Task 8c, the revegetation design task is included as a subtask to tasks 8a through 8e. Fees for the revegetation design are included in each of the design tasks and summarized in Exhibit B-6. Under this task, CONTRACTOR will develop and provide design documents for revegetation and irrigation elements coincident with each construction group under Group A, Group B, Group C and Group D restoration elements (drawings, technical specifications and cost estimate). Based on preliminary discussions, CONTRACTOR has assumed that non-native vegetation removal will be included under each of the construction groups. CONTRACTOR understands that revegetation plans will be split from the grading and stabilization elements to produce separate, stand-alone bid packages.

CONTRACTOR has estimated the level of effort for the detailed revegetation design based on the 30%-complete design documents, other interim design materials and site reconnaissance. CONTRACTOR assumes that the Project revegetation design will include the main elements developed with the COUNTY and listed above. CONTRACTOR will provide progress design submittals at the 65%- and 90%-completion levels for review and comment by the COUNTY. Each submittal will include drawings, specifications and cost estimates developed to appropriate levels of completion. CONTRACTOR will submit outline technical specifications with the 65% submittals, and draft technical specifications and a list of Bid Items at the 90% submittal. The final design submittal will consist of the following:

- Final signed and stamped drawings
- Technical specifications (following the COUNTY's format)
- List of bid items
- Engineer's estimate of likely construction costs
- Proposed construction schedule

Revegetation design drawings for Groups A through D will consist of the following preliminary sheet lists; the actual list of drawings will be refined as the design develops.

Group A Preliminary Revegetation Sheet List (RAs 23, 22, & 21)	
Description	Sheets
Title Sheet	1
General Revegetation Notes	1
Revegetation Plan (1" = 50')	3
Revegetation Notes and Details	2
Irrigation Plan (1" = 50')	3
Irrigation Notes and Details	2
Estimated Total:	12

Group C Preliminary Revegetation Sheet List (RAs 14, 13, 12, & 11)	
Description	Sheets
Title Sheet	1
General Revegetation Notes	1
Revegetation Plan (1" = 50')	6
Revegetation Notes and Details	3
Irrigation Plan (1" = 50')	6
Irrigation Notes and Details	2
Estimated Total:	19

Group B Preliminary Revegetation Sheet List (RAs 20-17, 15)	
Description	Sheets
Title Sheet	1
General Revegetation Notes	1
Revegetation Plan (1" = 50')	6
Revegetation Notes and Details	3
Irrigation Plan (1" = 50')	6
Irrigation Notes and Details	2
Estimated Total:	19

Group D Preliminary Revegetation Sheet List (RAs 10, 9, 2a, 2b, & 1)	
Description	Sheets
Title Sheet	1
General Revegetation Notes	1
Revegetation Plan (1" = 50')	4
Revegetation Notes and Details	3
Irrigation Plan (1" = 50')	4
Irrigation Notes and Details	2

Estimated Total:	15
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Group D Preliminary Revegetation Sheet List (RAs 7, 4, 4a, 4b, 3, & Neverbend)	
Description	Sheets
Title Sheet	1
General Revegetation Notes	1
Revegetation Plan (1" = 50')	4
Revegetation Notes and Details	3
Irrigation Plan (1" = 50')	4
Irrigation Notes and Details	2
Estimated Total:	15

TASK 9. PROJECT PERMITTING (PHASE 1 AND PHASE 2)

Project permitting will be coordinated under the following subtasks:

- 9.1 Permit Applications (Corps, CDFW, Regional Board)
- 9.2 Prepare Wetland Delineation
- 9.3 Coordinate and Prepare Biological Assessments
- 9.4 Coordinate Cultural Resources Report
- 9.5 Biological Resources Report for Napa River Ecological Reserve

9.1 Permit Applications

9.1.1 Programmatic Level Permits

The Project involves a 9.5 mile reach of the Napa River, however actual restoration activities will be targeted for 23 specific sites between 2015 and 2018. As such, CONTRACTOR shall use a "programmatic" approach for permitting that represents the sequencing of project implementation and permit constraints. CONTRACTOR shall prepare programmatic level permit applications for compliance with regulations administered by the following agencies: U.S. Army Corps of Engineers (USACE), and the San Francisco Bay Regional Water Quality Control Board (RWQCB).

The programmatic application packages will be prepared based on the 30%-complete preliminary designs for the entire project area (including Phases 1 and 2). The applications will state that project design updates will be submitted at 65%-complete, 90%-complete, and 100%-complete. The permitting approach is to gain regulatory approval for the overall project (all 10 reaches) based on a combination of the refined concept designs (Task 1) and the 30%-complete designs, with the assumption that the regulatory agencies will likely add conditions in the permits requiring reach-scale approvals as designs progress to 100%-complete design for bidding and construction. The CONTRACTOR's approach will limit submittal of separate application packages for each RA and process permit applications as specific project groupings move through final design stages. This approach will provide early and continuous resource agency input and streamline permit acquisition.

Under this work plan, each programmatic permit application package will consist of a binder containing all relevant information for each agency, as detailed below. For each application package, CONTRACTOR shall prepare an administrative draft version for review by the COUNTY. Comments will be incorporated into a revised draft set of permit applications and submitted for a second review by the COUNTY. CONTRACTOR shall prepare final application packages based on input from the COUNTY. The CONTRACTOR will compile and submit programmatic level permit packages to the following regulatory agencies.

U.S. Army Corps of Engineers

CONTRACTOR shall prepare the following items in support of the USACE permit application for an “individual” permit for the entire project area (Phases 1 and 2):

- Cover Letter. The cover letter will briefly describe the project and implementation process.
- Engineer Form 4345, Application for Standard Permits. This is the standard permit application form for USACE permits. Relevant maps and project information will be presented as attachments to the completed form.
- 404(b) (1) Alternatives analysis and Environmental Assessment. CONTRACTOR shall prepare a project alternatives analysis and Environmental Assessment based on NEPA requirements. This analysis will be based on the CEQA analysis conducted for the project.
- Wetland Delineation, Biological Assessments, Cultural Resources Investigation. The Wetland Delineation will be prepared by CONTRACTOR under Task 10.2. The Biological Assessments will be prepared as part of Task 10.3. The Cultural Resources Report will be prepared as part of Task 10.4. All three documents will be included in the USACE application packet.
- Supplemental Information. CONTRACTOR shall provide supplemental information to the USACE based on their requests (up to the level of effort as described in this scope/budget).

Regional Water Quality Control Board

The RWQCB will need to issue a combined permit for Waste Discharge Requirements under the state Porter-Cologne Water Quality Control Act and water quality certification under Section 401 of the Clean Water Act, respectively. CONTRACTOR shall prepare the following items for the permit application (Phases 1 & 2):

- Cover Letter. The cover letter will briefly describe the project and implementation process.
- Application for 401 Water Quality Certification and Report of Waste Discharge. This is the standard permit application form. Relevant maps and project information will be presented as attachments to the completed form.
- Supplemental Information. CONTRACTOR shall provide supplemental information to the RWQCB based on their requests (up to the level of effort as described in this

scope/budget).

9.1.2 Regulatory Agency Kickoff

CONTRACTOR will coordinate one (1) comprehensive, site visit for agency representatives to review and collaboratively discuss the 30% complete project designs that were previously submitted during the programmatic project permitting phase. The purpose of this kickoff is to invite early input from regulatory agencies for refinement of the designs to the 65% complete stage. CONTRACTOR will contact the USACE, USFWS, NMFS, RWQCB, and CDFW to initiate the permit consultation process and provide an overview of the project goals and construction plan. This agency kickoff would likely occur 3-6 months in advance of the 65% complete design deliverable.

CONTRACTOR will coordinate with these agencies to distribute project information, arrange the site visit, and gather comments on the preliminary designs. This coordination process may include the following activities:

- Provide follow up design updates to the regulatory team, as needed;
- Answer or clarify agency informational type questions (within level of effort associated with assigned budget); and
- Conference calls with the regulatory, client and design team to discuss follow up questions or concerns.

While in the field, or during other conversations with regulatory staff, CONTRACTOR will record key discussions and document them to the group in emails.

Deliverables: Email communications to document key discussions with regulatory agencies and one full-day site visit with regulatory agencies.

9.1.3 Project Notification Packages

Subsequent to completion of the 65% design, CONTRACTOR will prepare and submit four (4) project notification packages, one each, for Group A: RAs 23, 22, & 21, Group C: RAs 14, 13, 12, & 11, Group B: RAs 20-17, & 15, Group D: RAs 10, 9, 2a, 2b, & 1 and Group D: RAs 7, 4, 4a, 4b, 3, & Neverbend to USACE, USFWS, NMFS, and the RWQCB.

The project notification packages will include: completed agency notification forms, project description, project location maps, project design drawings, and other project details (including project impact dimensions by habitat type, amount of cut and fill above and below the ordinary high water mark, size and species of trees to be removed, site restoration plan, planting palette, etc.). The project notifications will indicate that 90% complete designs will be submitted at a future date. It is assumed that the regulatory agencies will require review and approval of the 65%, 90%, and 100% complete designs and that the project will not be authorized to proceed without their consent.

The USACE will be required to verify potential effects on cultural resources within the Group A, B, C and D sites. CONTRACTOR will coordinate with the cultural resources team and submit the archaeological survey reports prepared for the Group A, B, C and D sites. CONTRACTOR will submit the report to the USACE for review and consultation with the State Historic Preservation Officer (SHPO).

The proposed project will require an agreement with (CDFW) pursuant to Fish and Game Code Section 1602 (Streambed Alteration Program). In addition, authorization under the California Endangered Species Act (CESA) will be necessary for potential “take” of species listed under CESA.

9.1.3a Streambed Alteration Agreement (SAA)

CONTRACTOR shall prepare the following items in support of issuance of a SAA:

- Cover Letter. The cover letter will briefly describe the project and implementation process.
- Form FG2023, Notification of Lake or Streambed Alteration. This is the standard permit application form for a Streambed Alteration Agreement. Relevant maps and project information will be presented as attachments to the completed form.
- Supplemental Information. CONTRACTOR shall provide supplemental information to CDFW based on their requests (up to the level of effort as described in this scope/budget).

For the Group C sites, compliance with the California Endangered Species Act (CESA) is necessary and an Incidental Take Permit (ITP) will be required for potential impacts on California freshwater shrimp. The CESA ITP process is administered by CDFW and requires California Environmental Quality Act (CEQA) compliance (already completed for the project), compensatory mitigation, and proof of adequate funding to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures. CONTRACTOR will work with the COUNTY to develop a mitigation plan that meets these requirements. However, it is difficult to estimate how CDFW will receive the proposal and what additional data requests may arise through the ITP negotiation process. This scope and cost estimate assumes the process will be straight forward and progress smoothly; CONTRACTOR will support the COUNTY to the level of effort as supported by the cost estimate.

9.1.3b California Endangered Species Act (CESA)

CONTRACTOR shall prepare the following items in support of the application for an incidental take permit under Section 2081 of the Fish and Game Code:

- Cover Letter. The cover letter will briefly describe the project and implementation process.
- Section 2081 Application. CONTRACTOR shall complete the 2081 application. The application package will include a detailed avoidance, minimization, and mitigation plan.
- Supplemental Information. CONTRACTOR shall provide supplemental information to the CDFW based on their requests (up to the level of effort as described in this scope/budget).

CONTRACTOR will submit the draft project notifications, streambed alteration application, and ITP permit application to the COUNTY for review and will revise said documents based on one round of comments. CONTRACTOR will submit the project notifications and permit applications to the USACE, USFWS, NMFS, RWQCB, and CDFW. CONTRACTOR assumes that the COUNTY will provide checks for the CDFW and RWQCB notification and associated permit fees.

Deliverables: Draft Notifications for USACE, USFWS, NMFS, and RWQCB

Draft 1602 Notification for CDFW

Draft CESA ITP application submitted to ESA and County

Final Notifications submitted to USACE, USFWS, NMFS, and RWQCB

Final 1602 Notification submitted to CDFW

Final CESA ITP application submitted to CDFW

9.1.4 Regulatory Agency Coordination

Following project notification submittal, CONTRACTOR will coordinate with the agencies to track progress on project approvals and permits.

The tracking and coordination process may include the following activities:

- Provide design updates to the regulatory team, as needed,
- Answer or clarify agency informational type questions (within level of effort associated with assigned project budget),
- Participate in site tours with agency representatives

CONTRACTOR will coordinate a regulatory team site visits to review the 65% complete project designs in the field for Phase 1 and Phase 2. At the 90% and 100% complete level, CONTRACTOR will distribute the designs to the regulatory agency team for review and comment for Phase 1 and Phase 2. Based on past coordination efforts with the regulatory agency team, a site visit, meeting or conference call will be requested to review each design stage, and additional data requests may be received from the agencies. Participation in up to nine (9) site visits is included in this task.

Per the Section 404 permit requirements, the USACE may conduct a site survey to verify jurisdictional wetland features and confirm the wetland delineation that was submitted for the entire project as part of the overall project permit. CONTRACTOR will accompany the USACE on this site survey.

This scope assumes that the permit application tracking and coordination step will not require more than minor clarifications and information regarding previously submitted materials, and will not require conducting substantial new resource analysis or developing additional significant deliverables. If additional technical analysis or agency coordination is required beyond the level of effort afforded in the CONTRACTOR's budget, suggested approaches/recommendations to

proceed in support of the permitting process will be provided by the CONTRACTOR to the COUNTY project team. However, this scope of work and budget do not include such additional resource investigations or activities at this time.

Deliverables: Project updates at 65%, 90%, and 100% complete

Meeting notes distributed via email

9 site visits for design review with regulatory agencies

3 site visits with USACE to verify project wetlands

9.2 Prepare Wetland Delineation

CONTRACTOR shall prepare a preliminary jurisdictional delineation (Preliminary JD) for the project area. The project area to be delineated is assumed to include the 23 restoration sites identified in the Final Concept Plan (the high and medium restoration sites) and adjacent river channel, with a 100-foot buffer around each site. The Preliminary JD will be prepared in accordance with the USACE's 1987 Wetland Delineation Manual and the 2008 Arid West Regional Supplement. Potential waters of the U.S., including the limits of ordinary high water (OHW), will be delineated using aerial photography, LiDAR data, hydraulic modeling data, and field verification.

CONTRACTOR shall prepare a Preliminary JD report that includes the USACE Preliminary Jurisdictional Determination Form. The Preliminary JD report will document:

- The methods used to perform the Preliminary JD;
- Spatial extent (acres) of wetlands and waters in the project area;
- Dominant vegetation species observed;
- Dominant soil types observed; and
- Wetland hydrology.

It is assumed that a Preliminary JD will be sufficient to obtain USACE authorization of the project. The CWA 404 permit may contain conditions for future ground-truthing verification of the waters of the U.S. identified in the Preliminary JD, prior to initiating work. The CWA 404 permit may also request preparation of subsequent jurisdictional delineations within the project area to refine the extent of wetlands mapped in the Preliminary JD closer to the time of project construction. Jurisdictional delineations would be prepared in the event that the extent of waters of the U.S. at the project site is believed to differ from the Preliminary JD. If such additional field verification and jurisdictional delineations will be required, then the final reach design and construction contracts will need to include time for regulatory agency coordination to gain individual project reach approvals under separate contracts. Preparation of subsequent verification work with the USACE is not included in this scope of work.

CONTRACTOR shall prepare a draft Preliminary JD report for review by the COUNTY. CONTRACTOR shall then revise and submit the Preliminary JD to USACE with the CWA 404 application package. CONTRACTOR shall organize and attend one (1) field visit with the USACE to review the Preliminary JD (this is a separate meeting from those identified in Task

12e). Based on feedback received from the USACE, CONTRACTOR shall revise the Preliminary JD, if necessary, and submit the revised version to the USACE. It is assumed that refinements will be minor and related to adjustments to report mapping or minor text edits.

9.3 Coordinate and Prepare Biological Assessments

Two (2) biological assessments will be prepared for the project; one (1) for USFWS and one (1) for NMFS.

9.3.1 Preparation of the USFWS BA

CONTRACTOR shall prepare a Biological Assessment (BA) to facilitate USACE's Section 7 consultation with the USFWS regarding potential impacts to federally listed species that could be impacted by the project. The BA will address the potential for the project to result in "take" of listed species and adverse modification of their habitat as defined by Section 9 of the federal Endangered Species Act (ESA). This scope of work assumes take coverage will be requested for California freshwater shrimp (*Syncaris pacifica*) and California red-legged frog (*Rana aurora draytonii*). The BA will address each species and will incorporate the following components:

- a. Analysis of direct, indirect, and cumulative effects.
- b. Identification of the potential for "take" of listed species, adverse modification of critical habitat, and specific avoidance and minimization measures to ensure that effects are avoided and minimized to the extent practicable.
- c. Where appropriate, identification of additional actions that would assist in species conservation and are tied to tasks identified in recovery plans. The additional actions may be incorporated, as necessary, as Conservation Recommendations in the Biological Opinion.
- d. Description of the monitoring and reporting programs necessary to assure USFWS that they will know when the authorized amount or extent of take is approached or exceeded.

Within the BA, CONTRACTOR shall describe different avoidance, minimization, and mitigation actions appropriate to the potential level of effect on the listed species, and incorporate further protection through prescribed minimization and avoidance measures. Project impact activities may be categorized by:

- a. Intensity – the magnitude of effect, as determined by the various measurements of effect relative to the proportion of habitat, species life history, or species population affected.
- b. Duration – the period of the effect, such as short-term effects, long-term or chronic effects, or permanent effects (i.e., the action sets a new threshold for some feature of the species environment).
- c. Frequency – the number of effects within a unit of time.
- d. Severity – the period of recovery from the effect and the change in susceptibility of the species to effects of other actions.

CONTRACTOR shall prepare an administrative draft USFWS BA for review by the COUNTY. CONTRACTOR will then revise the report based on comments received, and submit the BA to USACE for use in consultation with USFWS. Based on feedback received from the USFWS, CONTRACTOR shall revise the BA, if necessary, and resubmit to the USACE and USFWS. It

is assumed that refinements will be minor and related to adjustments to report mapping or minor text edits.

9.3.2 Coordination of the NMFS BA

CONTRACTOR shall develop draft internal copies of NMFS and USFWS Biological Assessments (BAs) with evaluation emphasis on CCC – DPS Steelhead, fall-run Chinook salmon (federal species of concern), and California freshwater shrimp (federal endangered species). Drafts will, 1) describe the Oakville to Oak Knoll Reach Project, 2) describe the environmental baseline, 3) discuss critical habitat and biology/distribution of species within the affected area that have protected status or may be subject to such status under the Endangered Species Act of 1973, as amended (ESA), and 4) determine the potential effect of the project on such species. For freshwater shrimp, this is contingent upon the present study being performed by Stillwater Sciences for CEQA. The approach will align with the CEQA impact analysis, while meeting requirements of the Endangered Species Act, as administered by NMFS. Revised BAs will be submitted for COUNTY review. The Draft BA will then be submitted to the USACE for consultation with NMFS. The BA will be finalized with input from USACE and NMFS during the permitting negotiation stage. Based on feedback received from the NMFS, CONTRACTOR shall coordinate with CONTRACTOR team to finalize the BA, if necessary, and resubmit to the USACE and NMFS. It is assumed that refinements will be minor and related to adjustments to report mapping or minor text edits.

9.4 Cultural Resources

Based on guidance and information in the Pacific Legacy Technical Memorandum and 30%-complete preliminary design, CONTRACTOR will relocate and examine all known recorded archaeological and historical sites and assess their condition and extent (i.e., provide statements on the CONTRACTOR boundaries and physical integrity of archaeological deposits, and observations on the architectural integrity of the structures). If new data are generated, CONTRACTOR will give a preliminary determination regarding the eligibility of the studied resources to the California Register of Historical Resources (CRHR) and/or the National Register of Historic Places (NRHP).

- CONTRACTOR shall review previously assembled documentation for each resource and visit each location. Permission to access private or restricted public properties will be obtained by the COUNTY prior to the review of each resource.
- CONTRACTOR shall determine when to conduct the field review based on availability of rights of entry (ROE), weather, field conditions safety, etc. Field operations shall be coordinated with the COUTNY.
- CONTRACTOR shall complete an existing conditions review based on a visual field review of each resource. CONTRACTOR boundaries and physical integrity of archaeological deposits will be developed via surface observations. Archaeological testing will not be undertaken. Digital photograph views will be obtained and catalogued. The conditions review and selected photographs will be inserted in a *DPR 523 Update if new data are available* that can be filed with the California Historical Resources Information System, Northwest Information Center (CHRIS/NWIC).
- CONTRACTOR shall consult with the client where a resource is controlled by another agency and/or private party to determine appropriate course of action since each agency

- may have a management plan for resource.
- CONTRACTOR, where sufficient data are available, provide an opinion regarding resource eligibility of the California Register of Historical Resources and/or National Register of Historic Places.
- During relocation effort CONTRACTOR will note any discovery of previously unrecorded cultural resources. CONTRACTOR will not formally record any cultural resources noted during the relocation but rather will record their location, identify possible site type and provide recommendations for future recordation and evaluation. The documentation of any unrecorded resources can be undertaken through a revised task order.

CONTRACTOR shall prepare and submit a technical memo discussing results of the relocation effort; identify new data collected and preliminary determinations of eligibility to the CRHR/NRHP; provide a list of any new resources located during the relocation effort; develop recommendations for any unknown resources noted during the relocation effort; and, provide overall recommendations which may include additional field investigations, avoidance of certain areas, redesign, etc. Overall objective of document will be to identify potential cultural resource constraints and provide recommendations on proceeding with minimal impact to sensitive resources in the project area. The technical memo will be suitable for submittal to the USACE and SHPO with the cultural report prepared under the CEQA process and to assist with the continuing draft project designs. Appendices will include, as appropriate, graphics; revised DPR 523 forms; photographs, and other information collected during the relocation effort. CONTRACTOR shall submit a draft of the memo for review by the COUNTY. Further refinement of the cultural resources report based on requests from USACE will be conducted under this task. It is assumed that refinements will be minor and related to adjustments to report mapping or minor text edits.

9.5 Prepare Biological Resources Report For The Napa River Ecological Reserve

The California Department of Fish and Wildlife (CDFW) requested that the Project team prepare a Biological Resources Report (BRR) for the Napa River Ecological Reserve (NRER) also known as the Yountville Preserve. This property is located along the Napa River and is owned by CDFW. A portion of the NRER is included in the proposed Napa River: Oakville to Oak Knoll Restoration Project (project). Therefore, CDFW is a project partner and will be involved in the project development and finalization processes. The intention of this task is to provide CDFW with a more thorough inventory of existing onsite biological resources than typically conducted for CEQA compliance, but not as rigorous as protocol level surveys. CONTRACTOR shall inventory existing biological resources of the NRER, with primary focus on terrestrial vegetation and wildlife as opposed to fisheries. The BRR will support CDFW in making informed decisions regarding the planning and management of the NRER and to guide the goals and design of areas of the NRER to be incorporated into the proposed project. The BRR will be prepared under the following subtasks:

9.5.1 Collect and Review Background Materials

CONTRACTOR will collect and review reports relevant to the NRER including management plans, previous biological studies, and restoration plans. It is assumed existing information will

be provided by CDFW, and otherwise gathered from publically available sources such as the California Natural Diversity Database (CNDDB).

9.5.2 Conduct Biological Resource Field Assessments

Field assessments will be conducted to (1) characterize the existing habitats, (2) inventory species observed during the assessment, and (3) evaluate the NRER's potential to support special status species. Assessments will be conducted by qualified, recognized expert biologists in the disciplines of botany, herpetofauna (reptiles and amphibians), birds and mammals. The assessments will be conducted at the appropriate time of year and day to best document the resources of the site. The assessment will include a characterization of the entire NRER, with focus on locations where restoration activities are proposed (specifically Restoration Areas 19, 20, 21, and 22 identified in the Final Concept Plan). This task assumes one full field survey day, or two shorter survey days for each biological discipline. The assessment will not include protocol level (i.e., presence or absence) surveys for special status species.

9.5.3 Prepare Biological Resource Report

CONTRACTOR shall prepare a Biological Resource Report that documents the findings of the field assessments. The report will include a vegetation community map for the NRER, with any unique habitat features identified. The report will include a list of species observed during the field work and an assessment of species with the potential to occur onsite. The report will also discuss opportunities and constraints for conservation and restoration of important biological resources (e.g., rare or unique species and habitats) identified in the NRER. It is anticipated that this report will assist the project design team and CDFW assess potential impacts and opportunities in order to refine restoration actions at the site.

CONTRACTOR shall prepare an Administrative Draft biological resources report for review by the COUNTY. CONTRACTOR then revise and submit the Draft report to CDFW and the COUNTY. CONTRACTOR will arrange an on-site meeting with CDFW, together with ESA-PWA and COUNTY, to review and discuss the Draft report. Based on feedback received from the CDFW, CONTRACTOR will revise the report, if necessary, and submit the finalized version to the CDFW and the COUNTY. It is assumed that refinements will be minor and related to adjustments to report mapping and minor text edits.

9.6 Amended Support for Group D and Site 9

The CONTRACTOR prepared and submitted permit applications for Group D in December 2019. By mid-March 2020, the COUNTY received all agency approvals except from the U.S. Army Corps of Engineers (USACE). The COUNTY team did not receive comments/questions from the USACE until mid-March 2020, when concerns were raised about potentially sensitive archaeological resources at Site 9 that may require further investigation and discussion with the local tribal representatives and the State Historic Preservation Officer (SHPO) as well as a Programmatic Agreement and Memorandum of Agreement. After discussing Site 9 with the USACE, it was determined that the best option to keep Group D on schedule for construction in

2020 would be to remove Site 9 from the USACE 404 Permit application and permit Site 9 under a separate USACE 404 Permit.

9.6.1 Additional Permitting Support

Tasks associated with changing the scope of the Group D 404 permit and to support approval of Site 9 under a separate permit are described in this task.

9.6.1a USACE 404 Permit Application Amendment for Group D

CONTRACTOR shall prepare a cover letter and updated Group D project description to remove Site 9 and disclose changes at Site 10. The amendment package will also include the following attachments revised to remove Site 9 and include changes at Site 10: Aquatic Resources Delineation Report, Cultural Resources Report, and design plans. The scope to prepare the revised attachments are described in Task 9.6.1b.

CONTRACTOR shall revise the application documents once based on COUNTY comments, then submit the files electronically to the USACE on the COUNTY's behalf.

9.6.1b USACE 404 Permit Application for Site 9

CONTRACTOR shall prepare an application to request authorization from the USACE for Site 9. The application package will include a cover letter, completed application form, detailed site description, and impact estimates. The application package will also include attachments: project design plans for Site 9 only, representative photos, Aquatic Resources Delineation Report, Cultural Resources Report, and 65% revegetation plan. These materials will be developed from descriptions and data previously collected for the original Group D application.

CONTRACTOR shall revise the application documents once based on COUNTY comments, then submit the files electronically to the USACE on the COUNTY's behalf.

9.6.1c Regulatory Agency Coordination Support

To continue to support the COUNTY in securing USACE and SHPO approval for Group D and Site 9, CONTRACTOR shall participate in regular calls and email exchanges with the USACE to track project review and approval status and respond to their questions.

CONTRACTOR will also provide weekly updates to the COUNTY.

9.6.2 Supplemental Surveys

To support the Group D and Site 9 USACE applications, CONTRACTOR shall collect additional data and documentation to support the USACE's approvals. Efforts described in this task include site surveys at Site 10 to evaluate a new site access route and crossing of Hopper Creek, new berm breaches, trees, and potential sensitive cultural resources; and preparation of technical reports.

9.6.2a Aquatic Resources Delineation Reports

CONTRACTOR shall conduct a one-day site visit to new project areas at Site 10 to delineate potential jurisdictional resources. The delineation will be conducted in accordance with the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual, the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), and current USACE requirements to follow the 2015 Clean Water Rule. CONTRACTOR shall revise the Group D delineation report prepared in 2019 to remove Site 9 and add the new Site 10 areas. This scope assumes the USACE will not need to verify the new survey areas in the field.

CONTRACTOR shall also prepare a separate delineation report focusing only on Site 9 and resources previously investigated in 2019.

CONTRACTOR will revise both reports once based on COUNTY comments, then submit the files electronically to the USACE on the COUNTY's behalf.

TASK 10. PROJECT COORDINATION

CONTRACTOR shall coordinate its consultant team and be the primary contact with the COUNTY and other project stakeholders as needed through June 30, 2022. This task includes monthly budget and schedule tracking and coordination with the COUNTY, its other project consultants, stakeholders and the CONTRACTOR's team members. CONTRACTOR will attend up to two (2) additional design review meetings with the COUNTY and resource agencies.

CONTRACTOR shall coordinate a project kick-off meeting with the COUNTY and key project team members and stakeholders. The meeting will be used confirm project goals and objectives, outline key elements and recommendations of the Concept Plan and to clarify roles and responsibilities.

Early in the project, CONTRACTOR shall attend a resource agency coordination meeting that is anticipated to include representatives from National Oceanic and Atmospheric Administration (NOAA) Fisheries, Regional Water Quality Control Board (RWQCB) and California Department of Fish & Wildlife (CDFW), as well as the COUNTY. It is anticipated that the resource agencies will provide broad direction and an outline of priorities regarding design refinements, if any, at this meeting.

Following this meeting, CONTRACTOR will revisit the refined concept designs and propose potential design refinements for Phase 1 restoration areas based on:

- Input from the resource agencies
- Initial project team assessments and recommendations (coordinated site reconnaissance under this task)
- Proposed refinements to improve in-stream habitat, reduce costs and/or to improve function/stability (including input from CFS)

TASK 11. PRECONSTRUCTION MONITORING & SURVEYS

Preconstruction surveys will be required as conditions of Regulatory Agency permits. The CONTRACTOR team will provide the following Preconstruction Monitoring and Surveys for each construction phase for Group A, Group B, Group C, and Group D RAs as outlined under in Table 8.2 to support project implementation.

11.1 Document Riparian Habitat and Identify Preservation and Salvage Opportunities

A biologist will conduct pre-construction vegetation community mapping in the work areas. The biologist will characterize the composition and extent of riparian vegetation, and identify potential plant preservation and salvage areas. The work will be conducted in accordance with MM BIO-3a of the IS/MND. CONTRACTOR team will prepare a memorandum which discusses the methods and results of the survey.

Deliverables: Survey of existing vegetation communities in work areas
 Memorandum documenting the results of the survey

11.2 Contractor Environmental Awareness Training

A biologist approved by the U.S. Fish and Wildlife Service and the California Department of Fish & Wildlife (CDFW) will conduct an environmental training that will educate construction workers on: (1) special status species that may occur in the project area, (2) procedures to follow in the event a species is observed, and (3) other environmental BMPs and emergency spill response protocols. A hard copy of the presentation will also be provided to the Contractor.

Deliverables: Environmental Awareness Training presentation
 Laminated copy of the presentation

11.3 Pre-construction Plant and Wildlife Surveys

CONTRACTOR team will conduct the following pre-construction plant and wildlife surveys in accordance with the ECs and MMs identified in the Project's IS/MND.

- a) **Nesting bird surveys (EC-18BIOa-c):** including protocol-level Swainson's Hawk surveys and surveys for non-listed raptors and other avian species. If nesting birds are detected, CONTRACTOR will advise the COUNTY on appropriate avoidance measures. If avoidance is not feasible, CONTRACTOR will work with the COUNTY to develop minimization measures. Additional monitoring of nest sites during construction is not included in this scope of services.
- b) **Special-status plants (EC-21BIOa) and vernal pool fairy shrimp habitat (EC-19BIO):** surveys of areas identified as suitable habitat for special-status plant species will be conducted by a qualified botanist prior to commencement of work. Surveys will be conducted during the appropriate time of the year to properly identify special-status plants. An assessment if the work areas have the potential to support vernal pool fairy shrimp will also be conducted. If special status plants or vernal pool fairy

shrimp habitat are identified, CONTRACTOR will work with the County to develop avoidance or minimization measures.

- c) **Bat colonies (EC-23BIOa), mammal dens (EC-24BIOa), and Black-tailed deer fawning habitat (MM BIO-6):** a qualified biologist will survey the project area to look for evidence of a bat use, including roost trees or structures. If evidence is observed, or if potential roost sites are present in areas where evidence of bat use might not be detectable (such as a tree cavity), CONTRACTOR will work the COUNTY to plan additional assessments. Additional investigation or monitoring of roost sites is not included in this scope of services. The biologist will determine if bobcat, coyote, gray fox, or mountain lion den sites are potentially present in the work area. If the biologist identifies potentially active dens, CONTRACTOR will work with the COUNTY to develop avoidance or minimization measures. Additional investigation and monitoring of den sites is not included in this scope of services. Finally, the qualified biologist shall survey the work area to assess the site for suitability for black-tailed deer fawning. If potential fawning sites are present, the biologist will work with the COUNTY to develop avoidance or minimization measures
- d) **Dusky-footed woodrat (MM Bio-4a through 4c):** a qualified biologist will conduct a survey to determine if woodrat houses are present in the work area. If houses are found, and they cannot be avoided, a qualified biologist will work with the COUNTY to develop and implement a relocation plan for the houses.
- e) **CRAM Survey:** A qualified wetland ecologist will conduct a CRAM survey to support the assessment of ambient wetland conditions at RAs 12 and 13.

Survey results will be documented in a memo and submitted to the COUNTY and appropriate regulatory agencies

Deliverables: Pre-construction field surveys in accordance with EC-18BIOa-c, EC-19BIO, EC-21BIOa, EC-23BIOa, EC-24BIOa, MM Bio-4a through 4c, and MM BIO-6, CRAM survey
Memorandum documenting the results of the surveys

The CONTRACTOR team shall provide these services on a time-and-materials basis as requested by the client, not to exceed the authorized budget.

TASK 12. CONSTRUCTION PERIOD SERVICES

CONTRACTOR team shall provide Construction Period Services for Group A; RAs 23, 22, & 21, Group C: RAs 14, 13, 12, and 11; Group B: RAs 20-17, & 15; Group D: RAs 10, 9, 2a, 2b, & 1 and Group D: RAs 7, 4, 4a, 4b, 3, & Neverbend. COUNTY will provide its own construction inspector/manager. As the project designers, the CONTRACTOR's team is available to support the COUNTY's construction manager, with the following services for each construction phase:

12.1 Bidding & Construction Support Services

- Attendance of pre-bid meetings, up to two (2)

- Preparation of bid addenda and/or response to bidders' questions
- Attendance of pre-construction meeting
- Site visits and field fitting
- Review of submittals
- Response to requests for information (RFIs)
- Preparation of change orders

12.2 Construction Monitoring and Post-Construction Monitoring Report

- Monitoring for clearing and grubbing activities as required by resource agency permits. CONTRACTOR will be on-site to monitor clearing and grubbing activities that involve vegetation removal. The budget for this task assumes five (5) monitoring days at 8 hours per visit, including travel time. If requested, additional monitoring services will be provided.
- Observation of dewatering activities. To maintain consistency between biological monitoring efforts for dewatering activities, a CONTRACTOR representative will be on-site during dewatering activities to coordinate with biologists from Cramer Fish Sciences. CONTRACTOR will also coordinate submittal of the dewatering survey and relocation report prepared by Cramer Fish Sciences to appropriate regulatory agencies.
- CONTRACTOR will prepare a construction monitoring report suitable for submittal to regulatory agencies, including CDFW. The report will document compliance procedures and describe biological monitoring efforts conducted by CONTRACTOR and designated construction inspectors. CONTRACTOR will also coordinate with Horizon and Cramer Fish Sciences to incorporate documentation of their monitoring efforts into one complete monitoring report. The report will also include photos and maps, as appropriate. CONTRACTOR will submit the report to the COUNTY and appropriate regulatory agencies, as required by permit conditions.

Deliverables: Monitoring for clearing and grubbing (up to 60 site visits)
 On-site coordination for dewatering (up to 12 site visits)
 Post-construction monitoring report submitted to clients and regulatory agencies

The CONTRACTOR team shall provide these services on a time-and-materials basis as requested by the COUNTY, not to exceed the authorized budget.

TASK 13. AS-NEEDED TECHNICAL & DESIGN SERVICES

CONTRACTOR shall provide as-needed technical and design services to support the COUNTY with tasks associated with the Napa River Oakville Oak Knoll Restoration project. As the level of effort is unknown at this time, CONTRACTOR will provide these services on a time-and-materials basis as requested by the County. The CONTRACTOR team shall provide these services on a time-and-materials basis as requested by the client, not to exceed the authorized budget. Services include but are not limited to:

- Landowner coordination to support project reviews and approvals including meetings and documentation throughout the project process.
- Support regulatory agency review and permitting processes including responding to questions and comments, attendance at project meetings and provision of supplemental materials to facilitate project approvals and compliance with permit regulations.
- Design services to support modifications to the plan documents related to bidding and construction.
- Post project site assessments and design services including reconnaissance surveys related to storm damage and coincident repairs of project elements.
- Site visits, field fitting and design refinement – as-needed support to address specific site conditions and design elements to improve integration and function as well as to respond to regulatory priorities and input.
- Cultural resources surveys, literature reviews and documentation associated with the project design and construction phases.
- Underground Survey – deployment of video survey equipment and documentation of underground drainage utilities connected to outfalls on the Napa River.
- Geotechnical and subsurface investigations including borings and laboratory analysis.
- Napa River TAG - Participation in Napa River TAG meetings
- Grant Support - CONTRACTOR is available to assist the County with grant writing and other project funding support as needed at the COUNTY's request including but not limited to the production and provision of written and graphic materials to support grant applications.
- Meetings and site visits with COUNTY and grant agency staff to present and review project.
- Coordination and design services related to site utilities including PG&E.
- Additional support related to the combined Rutherford and OVOK LOMR and FEMA coordination.

TASK 14. ARCHAEOLOGICAL RECOVERY AND TREATMENT PLAN (SITE 21)

14.1 Site 21 Administration/Logistics

Based on coordination with the US Army Corps of Engineers (USACE) and SHPO CONTRACTOR (Pacific Legacy) will prepare a revised Late Discovery and Historic Properties Treatment Plan (HPTP). The Treatment Plan outlines a course of action for the treatment of the inadvertent discovery which is assumed to be eligible for the National Register of Historic Places (NRHP). Since the resource is considered a historic property, preparing the HPTP was appropriate. CONTRACTOR time under this task includes preparations for fieldwork and phone call consultations with the COUNTY.

The purpose of HPTP is to propose a course of action regarding the inadvertent discovery of prehistoric archaeological materials within the Area of Potential Effect (APE) of the Oakville to Oak Knoll Napa River Restoration Project for Site 21 (Project). The area of discovery is labeled 21-1. In September 2015, during inspection of spoils from trenching of an irrigation line and tree removal, previously unidentified materials associated with prehistoric archaeological Site 21

were discovered within the Project APE. These materials included the residue of stone tool manufacture (e.g., obsidian debitage); formed flake obsidian tools; faunal remains including abalone, mussel, and clam; groundstone artifacts; and human remains. The newly discovered materials were recorded at a depth of approximately 16 to 24 inches below the ground surface, while the horizontal extent of the deposit has yet to be determined. As originally recorded, archaeological Site 21-1 was characterized as a lithic scatter. Monitoring and trenching activities for the restoration project, however, have resulted in a substantially different characterization of the deposit than first recorded.

14.2 Site 21 Phase I Assessment

Per Section 106 of the NHPA (36 CFR 800.5(a)(1)), an adverse effect occurs when an undertaking alters, directly or indirectly, any of the characteristics that qualify a historic property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association. Ground disturbing activity would result in the removal of the Site 21-1 deposit within the Project APE. That action would result in an adverse effect to Site 21-1.

The nature, extent, and integrity of archaeological materials associated with Site 21-1 has not been determined. Very little subsurface archaeological excavation has been undertaken to define the site's breadth or depth. Construction and maintenance of the vineyard has resulted in disturbance to the Site 21-1 deposit, but the severity and extent of that disturbance remains uncertain. Given these unknowns, a phased research methodology is proposed to assess and, if necessary, mitigate potential adverse effects to Site 21-1.

CONTRACTOR shall complete the Phase 1 Assessment to determine if there are substantial deposits that would warrant further study and a more formal National Register of Historic Places (NRHP) eligibility reevaluation and/or data recovery. Phase 1 would entail excavation and fieldwork at the within the APE of the project. This effort would also be conducted to determine if further work (e.g. data recovery) is needed to mitigate the effects of the project.

The Phase 1 presence/absence testing, rather than formal evaluation, will allow CONTRACTOR to expeditiously determine the nature and integrity of the deposits within the project area. This form of testing is the most cost effective way to proceed in order to determine if additional work will be needed. The work proposed does not constitute NRHP evaluation or data recovery, which may be required if subsurface deposits are found to be extensive or potentially significant. However, information gathered through historic research and excavation may allow for a NRHP eligibility determination if few materials are found.

In order to better define the site boundaries and characterize the depth, integrity, and extent of the deposit within the construction area, CONTRACTOR recommends the excavation of a series of Shovel Test Probes (STPs) within the site boundaries. The work would be conducted solely to determine the presence or absence of subsurface materials within the project area. The exploration will not be performed to evaluate the integrity or National Register significance, although that does not preclude that particular type of data from being collected. We also recommend mechanical trenching to gather information regarding the stratigraphy the resource in the HPTP.

14.2.1 Surface Inspection

Cultural material will be pin-flagged and depicted on a large-scale site map to portray their surface distribution. The horizontal extent of these surface materials should indicate tentative site boundaries. Surface concentrations will then be targeted for subsurface investigation.

14.2.2 Subsurface Investigation

Subsequent to surface inspection, a phase of test excavation is proposed that will probe the extent and nature of subsurface cultural deposits. Subsurface investigation—under the auspices of an Assessment investigation—will be initiated with Shovel Test Probes (STPs) will be conducted to identify subsurface cultural constituents and to assist in determining cultural material density. STPs are rapidly dug units, 20 x 20 inches in size, and excavated in 8 inch depth increments up to a minimum depth of 24 inches. The size of STPs will be selected according to excavation and sediment conditions to provide a satisfactory balance between the recovery of reliable archaeological data and a satisfactory excavation rate. Excavated soils will be dry-screened through ¼-inch mesh. Proceeding with 8 inch depth intervals provides control in determining the presence, absence, and relative differences by depth of archaeological materials. In a USACE review of the HPTP it was recommended that STPs be excavated to 28 inches or deeper. CONTRACTOR will take this guidance into consideration. In order to accommodate a deeper unit, STPs may be expanded to 20 inches x 28 inches or 36 inches x 18 inches in size. This adjustment may reduce the number of STPs excavated based on the originally proposed size.

The placement of STPs and auger bores will be geared towards establishing the location and nature of subsurface deposits associated with site 21-1. A series of STPs will be positioned at systematic intervals (e.g., 8 – 16 inch increments) within the observed site boundaries outside of the vineyard area (cf. Figure 3 in HPTP). An estimated ten to a maximum of 15 STPs are proposed to sample site deposits. Estimated rates of excavation are based on various criteria, often times unknown from the outset. These criteria primarily regard sediment characteristics (e.g., degree of compactness, subsurface disturbances, rock/cobble/root content, sediment texture, and moisture content) and logistical factors. For budgeting purposes we estimate a rate of two (2) STPs (1/3 cubic yard) per day for a team of two (2) archaeologists. STPs may be supplemented with auger bores. No more than three (3) cubic yards will be hand excavated.

All excavated sediments will be screened on plastic tarps spread out next to each unit to facilitate excavation, minimize ground disturbance, and capture dirt for backfilling. All excavation units will be backfilled upon completion and compressed to minimize settling. The excavated site area will be restored to its original appearance to the greatest extent possible. All cultural materials will be recorded and/or photographed, and collected for potential analyses.

CONTRACTOR will conduct presence/absence testing using mechanical techniques which will allow us to expeditiously determine the nature and integrity of the deposits, if they exist, within APE. This form of testing is the most cost effective way to proceed in order to determine if additional work will be needed. CONTRACTOR will attempt to define site boundaries and characterize the depth, integrity, and extent of the deposit within the APE. This will be completed by mechanical (backhoe) trenching.

Backhoe trenching will be conducted using a 36" backhoe with a smooth blade to determine if buried deposits are present. Trenching will extend to a maximum depth of 5 ft. below the surface. All trenching will be monitored by CONTRACTOR (qualified archaeologist and a geomorphologist). We have assumed budget for three (3) days of backhoe excavation for an archaeologist and geomorphologist and two (2) days for recording the stratigraphy of the trenches.

Site mapping will occur throughout the project's duration. The provenience of all sampling units will be tied into this base map and unique designations will be used for reference.

Color photographs of stratigraphic exposures will be captured. Soil profile drawings will also be prepared as appropriate. CONTRACTOR assumes five (5) days of STP excavation using a four (4) person crew and a field director.

The following records will be compiled during the course of the Phase 1 investigation: (1) general site photographs will be taken before, during, and at the completion of excavation work; (2) daily excavation records and field notes will be transcribed; (3) feature records (when applicable) will be completed; and (4) daily notes will be logged by the field supervisor. All excavated soils will backfilled and the area returned to its original appearance once the excavation of a specific unit has been completed.

Several levels of reporting will be completed by the CONTRACTOR. Records will be kept on a daily basis which will include, at a minimum, date, work location, duties performed, crew, time reported in and out, visitors and affiliation, vehicles, work area, discoveries, observations, problems and attachments such as supplementary reporting forms or accident reports. The form will be completed for all phases of archaeological activity conducted at the site. These will be kept on file by the CONTRACTOR (Pacific Legacy) for inspection.

At the conclusion of the subsurface excavations, CONTRACTOR will prepare a letter report detailing the results of the effort. This report will include descriptions of any features and/or artifact concentrations located during the field investigations. If enough information is gathered through the Phase I program we will include a NRHP eligibility determination in the report. If human remains are encountered they will be identified and left in place. We will immediately notify the COUNTY and the USACE of the find.

CONTRACTOR will also prepare a new DPR form for the site which would include the locations of new work and any changes to the existing site description and mapped boundaries.

Under this task, CONTRACTOR will provide Native American monitoring to be performed while archaeologists collect human remains, other bone material, and cultural materials identified in the trench spoils deposit and during the backfilling of the trench.

Two (2) Native American monitors will be provided to inspect the spoils deposit prior to the soil be placed back in the trench and while additional tree cleanup work occurs along the riverbank.

Assumptions related to Task 14.1 and Task 14.2 follow:

This proposal and cost estimate is based on the following assumptions:

- No more than eight (8) days of subsurface exploration will be required for STP excavation;
- No more than five (5) days of work will be required for backhoe trenching;
- Subsurface work has been focused to provide information on depth, integrity, and site boundary definition;
- No more than three (3) cubic yards of soil will be inspected by hand excavation;

14.3 Site 21 Prepare Additional Documentation

The results of excavation under Task 14.2 provided materials (e.g. artifacts, human remains) to adequately revisit the National Register of Historic Places (NRHP) eligibility determination of the site. CONTRACTOR shall complete an evaluation report which would determine how the site is managed in the future. At present the site is presumed to be eligible for management purposes. This determination is not based materials recovered from the site. It is our opinion that sufficient materials were collected from the trenching and excavation program to address the eligibility determination of the site based on materials collected and stratigraphic observations. This approach assumes that the USACE and the SHPO will concur with our approach, which is as follows:

14.3.1 Conduct Cleaning/Cataloging/Analysis

Excavations recovered approximately 3,287 pieces of obsidian debitage, 753 pieces of shell, 317 faunal items, 8 obsidian tools, 9 pieces of groundstone, 19 shell beads, and a few other items (quartz crystal, chert flakes). In addition to the items from the STP's numerous biface/biface fragments, formed flake tools, groundstone, shell beads, and worked bone were collected during inspection of the spoils deposit. It is unknown how much was collected from the spoils deposit although the majority of materials noted in the field are flaked stone items (bifaces and groundstone). In order assess the collection, CONTRACTOR will clean and catalog the materials collected according to methods described in the Historic Properties Treatment Plan (HPTP). A total of 12 boxes of archaeological material were recovered including human remains. We assume two (2) boxes of materials may be curated.

14.3.2 Prepare NRHP Evaluation Report

This task is for reporting on the testing phase of the investigation which includes recovery from the trenching and STP excavation and collections from the irrigation ditch. We have included limited costs for specialists for obsidian sourcing and hydration, osteology, and geomorphology. The evaluation report will contain recommendations for further management of the site depending on the eligibility determination and consultation with Mishewal Wappo Tribe.

CONTRACTOR will prepare the evaluation report. Reporting format and contents will follow SHPO ARMR guidelines. Key personnel and crew members for cultural resource studies will meet qualifications published in "*Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*," (Federal Register, Vol. 48, No. 190, September 29, 1983). CONTRACTOR'S field methods and compliance documents will follow the State Office of Historic Preservation guidelines published as *Archaeological Resource Management Reports*

(ARMR): *Recommended Contents and Format and Guidelines for Archaeological Research Designs*. Reporting and treatment of finds will follow those outlined in our HPTP approved by SHPO. We have budgeted time for faunal and limited human remains analysis (MNI), and dating of finds.

14.3.3 Consult with Representatives of Appropriate Native American Groups

CONTRACTOR recommends that consultation with representatives of appropriate Native American groups to determine, what, if any, types of analysis may take place as soon as cataloging begins. The consultation should also consider curation of non-burial artifactual material, treatment and disposition of human remains, and treatment if the resource is found to be not eligible for the National Register of Historic Places (NRHP). The consultation would be to determine a course of action for management of the resource with respect to human remains.

TASK 15. ARCHEOLOGICAL CONSTRUCTION MONITORING AT SITE 21

15.1 Monitoring and Burial/Human Remains Removal During Controlled Grading

This task assumes that there will be monitoring of mass excavation prior to general construction. The budget we are presenting is an estimate for budgeting purposes. This task will be refined after completion of the evaluation report, and consultation with the USACE, SHPO, and the Mishewal Wappo Tribe.

15.1.1 Conduct Monitoring during Mass Excavation

This task includes a CONTRACTOR crew of three (3) for 17 days to monitor the controlled mass excavation. Estimated site surface area to be removed is approximately 0.89 acres or 38,440 square feet. Estimated average depth of the archaeological deposit is three (3) to four (4) feet. A senior osteologist will be available to assist in identifying human remains during the mass excavation.

The CONTRACTOR monitors will inspect the nature of the soils, depth of deposit, constituents, disturbance to site deposits and other observations will be documented as appropriate. Color photographs of the stratigraphic exposures using a digital format will be taken. As appropriate, soil profile drawings will be prepared. Any subsurface features encountered will be briefly documented for further evaluation through location mapping, description, and photographs. The archaeological monitors will prepare a daily field log which will include log in and out times, a description of the daily excavation activities and monitors observations. We have budgeted for 17 days for one senior monitor and two cultural resource technicians for inspection (including raking) of the spoils. We have also included an osteologist in case finds need to be assessed.

15.1.2 Conduct Feature Investigation and Burial Removal

This task includes eight (8) days for a crew of three (3) to conduct feature excavation. During the trenching and STP excavation, four (4) sets of remains were uncovered. These have not been removed. Prior to mass excavation in the four (4) areas, the remains will be removed. Should additional features or intact human remains be encountered, these will have to be removed.

15.1.3 Conduct Feature Analysis and Reporting (TBD)

This task will include analysis of all human remains recovered from the site as well as artifacts recovered from intact features excavated during the controlled mass grading. We have not budgeted for this task because the level of effort will be dependent on the amount of material, features, and human remains uncovered. Due to uncertainties related to this task, the CONTRACTOR has assumed a contingency budget of \$50,000 under Task 13 – As-Needed Technical and Design Services to support potential needs.

15.1.4 Prepare Human Remains for Reburial

Per consultation with representatives of appropriate Native American groups, the human remains recovered from Site 21 will be prepared for reburial.

15.1.5 Curation

Depending on results of tribal consultation, we anticipate that there will be selective curation of materials at Sonoma State University. The cost estimate assumes two (2) boxes of material will require curation. CONTRACTOR assumes that burial related items will not be curated but rather reinterred.

15.1.6 Monitoring by Representatives of Appropriate Native American Groups

Under this task, CONTRACTOR shall provide tribal monitor to monitor for all excavation work at Sites 21, 22 and 23 up to a maximum of 30 days.

TASK 16. ARCHAEOLOGICAL INVESTIGATIONS

16.1 Investigations: Site 22, 23 and 14

Based on the discovery of a potentially significant archaeological site at Site 21, CONTRACTOR shall conduct testing at Site 22 and Site 23 (Group A) and Site 14 (Group C) to confirm the previous studies and confirm that buried archaeological deposits are not present in the restoration project areas.

To locate any archaeological deposits that might be present, a series of mechanical trenches are proposed beginning outside of the predicted site boundaries and then extending towards the known site area. During this work, CONTRACTOR (archaeologists) shall direct the trench placement and observe the trenches for cultural materials, such as artifacts and faunal remains. Stratigraphy will also be observed to determine at what depths, if any, intact deposits or A-Horizon soils (the type of soil most likely to contain cultural deposits) are present. Examination of trench excavations will allow archaeologists to determine the presence of any intact cultural deposits that may be present within the construction impact area.

For budgeting purposes, CONTRACTOR assumes the following:

- Site 22: eight (8) trenches
- Site 23: six (6) trenches

- Site 14: twelve (12) trenches

The backhoe used for the trenching will be equipped with a 36-inch-wide smooth-edged bucket or less. The archaeologist will determine the appropriate pace and depth of trench cuts. It is anticipated that three to five (5) 15-foot-long trenches will be excavated. Based on the ATUs, it appears that hardpan will be reached at 8 feet below ground surface (bgs). Trenches are anticipated to extend to a depth of no more than 10 feet bgs. Trenches needing to be entered will be stepped or benched if it becomes necessary to enter trenches exceeding five (5) feet in accordance with CalOSHA standards.

All trenches will be documented by the archaeologist. A stratigraphic profile (including Munsell readings) will be prepared for each trench. Sample portions of the trench walls will be photographed. Trench locations will be mapped with a sub-meter Global Positioning System (GPS) unit and/or total station.

Mechanical trenching would cease if any intact archaeological deposits are reached. Under no circumstances will mechanical trenching continue if human remains are uncovered. If artifacts, intact stratigraphy or human remains are found, work will cease until a testing and evaluation approach can be developed in consultation with the Corps and the SHPO.

Previous archaeological identification work at Site 22 and Site 23 consisted of a records search and a pedestrian survey of the project area. During the survey, obsidian lithics were observed on the site's surface, prompting the recommendation of additional subsurface exploration. Ten (10) auger test units (ATUs) and two 24 inches x 24 inches hand excavated units were placed in the site. Limited flakes of obsidian were observed at a shallow depth with a few pieces up to 40 inches in depth. One (1) obsidian biface fragment was observed on the surface and one broken biface was recovered from a test unit but no other artifacts or human remains were observed. This investigation will be followed by an extensive trenching program conducted by the CONTRACTOR.

During the trenching at Site 22, two (2) areas of intact archaeological deposits were identified which will require an Extended Phase 1 controlled hand excavation to better characterize in terms of whether the site is NRHP eligible. Work under this task includes one (1) week of fieldwork with additional backhoe excavation to remove the disturbed overburden followed by controlled hand excavation of the two (2) intact archaeological deposits to consist of no more than four (4) cubic yards of material. Following this investigation CONTRACTOR will prepare a NRHP evaluation report.

16.2 Inventory at Restoration Sites 11, 12, and 13

Group C Restoration Sites 11, 12, and 13 will be subjected to a pedestrian survey. Because portions of these sites have been flooded and much of the parcels are covered in dense vegetation, subsurface exploration will be accomplished using a truck mounted auger. An inventory report will be prepared to document the results of the pedestrian survey and augering.

16.3 Prepare Supplemental Identification Report

Following the fieldwork, a supplemental identification report will be prepared documenting the results of the exploration program. This report will be used to support the 404 permit process and to outline any additional measures that might be needed or to revise any measures already identified. If trenching reveals deposits that must be treated, a supplemental identification report will not be prepared. Instead, a testing and evaluation scope of work and cost estimate will be developed to address the finds. The testing and evaluation plan will be considered additional services.

16.4 Section 106 Compliance Support

CONTRACTOR will continue to support the Section 106 compliance work needed for the USACE Section 404 per process. Included in this tasks are up to three (3) meetings with the USACE and SHPO to coordinate regarding the process needed to amend the 404 permit for Group A (Sites 23, 22, and 21) and the work needed to obtain a Section 404 permit for Group C (Sites 14-11).

16.5 Investigations: Sites 20, 19, 18, 17,15, 10, 9, 7, 4, 4a, 4b, 3, 2a, 2b, 1 and Neverbend

16.5.1 Native American Correspondence

CONTRACTOR will contact the California Native American Heritage Commission (NAHC) and request a Sacred Lands File search of the Project Area of Potential Effects (APE), in addition to a contact list of Native American representatives who may be interested in the Project. In addition, CONTRACTOR will send initial outreach letters with Project information to Native American contacts provided by the NAHC. CONTRACTOR will also make one round of follow-up phone calls to each Native American contact provided by the NAHC to request that they share information regarding potential cultural resources in the APE or vicinity.

16.5.2 Archaeological Survey

CONTRACTOR will conduct an archaeological surface and subsurface survey of all proposed RAs 20, 19, 18, 17, 15, 10, 9, 7, 4, 4a, 4b, 3, 2a, 2b, 1 and Neverbend. The survey will be directed by a CONTRACTOR archaeologist meeting the Secretary of the Interior's Standards for Archeology and supported by additional archaeologists and one Native American monitor. The scope assumes that the Mishewal Wappo will provide the Native American monitor. The survey will consist of two phases: 1) pedestrian survey; and, 2) subsurface survey. The pedestrian survey will be conducted by walking the APE in systematic 15-meter-wide parallel transects and inspecting the ground surface for cultural material. The subsurface survey will be conducted by mechanically excavating exploratory trenches with a backhoe in an approximate grid in the APE in areas outside of any previously recorded archaeological resources. Within previously recorded archaeological resources in the APE, the subsurface survey will be conducted by hand-augering Auger Units (AU[s]) in an approximate grid.

The mechanical trenching will be accomplished using a backhoe with a 2- or 3 foot-wide, smooth blade bucket to excavate trenches measuring approximately 3 to 4 feet wide. The length

and depth of trenches will be dependent on professional judgment by the CONTRACTOR'S archaeology field director (field director), and will range from approximately 8 to 15 feet long and 3 to 5 feet wide, respectively. Trenches will be excavated to a minimum target depth of 10 feet below surface and possibly deeper in areas where Project design may include ground disturbance deeper than 10 feet below surface. The COUNTY will provide the equipment and operator for the trenching. Trenches and AUs will be backfilled as observation and documentation at each trench or AU is completed. If deemed necessary by the CONTRACTOR, samples of excavated sediment from the trenches will be hand-screened through ¼-inch wire mesh screen by on-site archaeologists to better characterize the sediment and/or recover potential archaeological material. All sediment excavated in AUs will be screened through ¼-inch wire mesh screen. Notes on any identified cultural resources will be collected to meet or exceed site recordation guidelines based on the California Office of Historic Preservation's *Instructions for Recording Historical Resources* and California Historical Resources Information System (CHRIS) recommendations. Digital photographs will be taken to document ground conditions, and all observations will be recorded in the field. In the event that human remains are encountered during the subsurface survey, they will be treated in accordance with California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98. No archaeological material will be collected—any identified archaeological material will be returned to the trench or AU from which it was recovered—and no curation is included in this scope. Initial recordation will be done for any cultural deposits greater than 45 years of age encountered, though no evaluation of eligibility for the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) for any cultural resources is included in this scope; as such, no evaluative archaeological testing or data recovery is included in this scope.

The CONTRACTOR will determine the number of and exact placement of trenches and AUs based on background research, sediment observed during excavation, and assessed potential for buried archaeological material. The table below provides estimates for proposed number of trenches and AUs at each Restoration Site. CONTRACTOR estimates that 8 to 10 trenches and 14 to 20 AUs can be completed per work day by each team of two archaeologists and equipment operator, depending on conditions. For budgeting purposes, CONTRACTOR assumes the following:

Group	Restoration Site	Trenches	AUs
B	15	10	4
	17	6	0
	18	4	0
	19	16	4
	20	4	6
	Total	40	14
D	Neverbend	8	2
	1	10	0

	2b	0	0
	2a	0	0
	9	8	30
	10	14	4
	Total	40	36
D	3	12	4
	4b	8	4
	4a	2	4
	4	12	0
	7	0	0
	Total	34	12
	Total	114	62

16.5.3 Cultural Resources Survey and Inventory Report

CONTRACTOR will prepare a Cultural Resources Survey and Inventory Report (CRSIR) documenting the cultural resources studies conducted for the Project to date, in addition to the results of the Native American correspondence and archaeological survey included in this scope. The CRSIR will include the following elements:

- Introduction
- Background on Project
- Definition of APE
- Regulatory Context
- Prehistoric, Ethnographic, and Historic Contexts
- Field Methods
- Study Results
- Summary and Conclusions
- DPR 523 Forms (Site Records or Site Record Updates)

Note, the CRSIR will include California Department of Parks and Recreation (DPR) 523 forms (site records) for any archaeological resources identified during the survey and also for previously recorded archaeological resources in the APE.

CONTRACTOR will submit the draft CRSIR to the COUNTY in electronic format and will respond to one round of comments on the document. CONTRACTOR will submit the revised CRSIR to the USACE in electronic format and will respond to one round of comments on the document. CONTRACTOR will then submit the final CRSIR to the USACE and COUNTY in electronic format. If, after the USACE submits the final CRSIR to the SHPO, the USACE requires revisions to the document for resubmittal to the SHPO, CONTRACTOR will revise the final CRSIR and submit it to the USACE and COUNTY in electronic format.

Assumptions

- Deliverables consist of the following versions of the CRSIR: 1 draft to County, 1 draft to USACE, 1 final to USACE and County, 1 revised final to USACE and County
- All deliverables submitted in electronic format (pdf or Word)
- Subsurface survey will consist of mechanical trenching and hand-augering (within previously recorded archaeological resources)
- Monitor will provide one (1) Native American monitor for all fieldwork
- Subsurface survey will require 15 10-hour days of fieldwork (not including travel time) with 2 CONTRACTOR archaeologists and 1 Native American monitor – all are included in this scope
- COUNTY will provide one (1) backhoe and operator for subsurface survey
- No artifacts will be collected, no curation will be required, and no special studies (e.g., obsidian hydration, radiocarbon dating) are included
- No evaluation of eligibility for the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) for any cultural resources is included
- No evaluative archaeological testing or data recovery is included in this scope.

16.6 Additional Support for Group D and Site 9

To support the Group D and Site 9 USACE applications, CONTRACTOR will collect additional data and documentation to support USACE approvals. Efforts described in this task include completion of a Memorandum of Agreement for Site 9, a Historic Properties Treatment Plan for Site 9, and implementation of the Historic Properties Treatment Plan for Site 9. CONTRACTOR will also update the Group D Cultural Resources Inventory Report to include new Site 10 areas. Under this task CONTRACTOR will provide monitoring during mass grading at Site 9 including coordination with tribal representatives.

16.6.1 Revise Group D Cultural Resources Inventory Report

CONTRACTOR will update the Group D Cultural Resources Inventory Report to remove Site 9 from the reporting and update with new Site 10 areas. The inventory has resulted in a finding of No Adverse Effect to Historic Properties, which will require concurrence from the State Historic Preservation Officer. With SHPO concurrence, no additional work regarding cultural resources will be required at the Group D Sites.

16.6.2 Site 9 Only Cultural Resources Inventory Report

CONTRACTOR will draft a new Cultural Resources Inventory Report to include only Site 9. There is an archaeological resource within the Site 9 work area that has been determined to be a historic property for the purposes of National Historic Preservation Act compliance. The inventory resulted in a finding of Adverse Effect to a Historic Property. A Memorandum of Agreement and Historic Properties Treatment Plan will be necessary to resolve adverse effects (see below).

16.6.3 Memorandum of Agreement

CONTRACTOR will draft a Memorandum of Agreement (MOA) to resolve adverse effects to a historic property in Group D Site 9. The MOA will include the stipulations necessary to resolve adverse effects including implementation of a data recovery program, outlined in a Historic Property Treatment Plan, executed between the U.S. Army Corps of Engineers (USACE), the State Historic Preservation Officer, the County of Napa, and Mishewal Wappo Tribe of Alexander Valley (assume two rounds of comments).

16.6.4 Historic Properties Treatment Plan

CONTRACTOR will draft a Historic Properties Treatment Plan (HPTP) as outlined in the MOA. The HPTP will include how a data recovery program would preserve the significant information the archaeological resource is expected to contain. Treatment would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim of targeting the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The HPTP will include provisions for analysis of data in a regional context; reporting of results within a timely manner and subject to review and comments by the appropriate Native American representative, before being finalized; curation of artifacts and data at a facility or location acceptable to the County and appropriate Native American representative; and dissemination of final confidential reports to the appropriate Native American representative, the Northwest Information Center of the California Historical Resources Information System and the County (assume two rounds of comments).

16.6.5 Implementation of HPTP

If findings warrant implementation of the HPTP, CONTRACTOR will implement the HPTP as described. This scope assumes that implementation will be consistent with the procedures as described in the HPTP, including a percentage of recovery agreed upon by the consulting parties. The results of the data recovery program will be provided in a final report; dissemination of final confidential reports to the appropriate Native American representative, the Northwest Information Center of the California Historical Resources Information System and the COUNTY (assume two rounds of comments). Additional actions, such as the recovery of human burials or additional data recovery not outlined in the HPTP, would be scoped and budgeted separately.

16.6.6 Conduct Monitoring during Mass Excavation (Site 9)

This task includes a CONTRACTOR crew of up to two (2) for 10 days to monitor the controlled mass excavation at Site 9. Estimated average depth of the archaeological deposit is three (3) to four (4) feet.

The CONTRACTOR monitors will inspect the nature of the soils, depth of deposit, constituents, disturbance to site deposits and other observations will be documented as appropriate. Color photographs of the stratigraphic exposures using a digital format will be taken. As appropriate,

soil profile drawings will be prepared. Any subsurface features encountered will be briefly documented for further evaluation through location mapping, description, and photographs. The archaeological monitors will prepare a daily field log which will include log in and out times, a description of the daily excavation activities and monitors observations. We have budgeted for 10 days for one senior monitor and one cultural resource technician for inspection (including raking) of the spoils.

16.6.7 Monitoring by Representatives of Appropriate Native American Groups

Under this task, CONTRACTOR shall provide tribal monitor to monitor for all excavation work at Sites 21, 22 and 23 up to a maximum of 30 days.

TASK 17. COMBINED RUTHERFORD AND OVOK LOMR: LOMR AND FEMA CONSULTATION

17.1 Hydraulic Analysis

Task 17.1a – Duplicate, corrected, existing and post-project model development

FEMA requires several formal steps for hydraulic analysis to support the LOMR application (Form 086-0-27A Riverine Hydrology and Hydraulics). This includes developing a duplicate effective, corrected effective, existing conditions, and post-project conditions model of the study reach.

A *Duplicate Effective (DE)* model has been completed for the Rutherford reach, and individual DE models were developed for each of the restoration groups in the OVOK reach. These models will be merged into a single DE model for the study reach. Cross sections may need to be added to fill gaps between the No-rise sites and create a complete DE model. As found during the No-rise studies, the effective water surface elevation reflects prior models from different time periods and modeling software. Thus, the final DE model may need to be separated into parts to capture the effective water surface within the 0.5' tolerance required by FEMA.

The *Corrected Effective (CE)* model fixes any errors in the DE model and reflects changes to the topography that may not be reflected in the Effective Model. Any adjustments made to the CE model will be extended to the *Existing Conditions (EC)* model to establish a new existing conditions baseline from which to model the new, post-project conditions for the purposes of the LOMR. CONTRACTOR has completed a CE and EC model for the Rutherford reach, and individual CE/EC models for the OVOK reach restoration sites. These will be merged into CE/EC models covering the full study reach. As with the DE model, gaps between the OVOK restoration sites may need to be filled to form continuous CE/EC models.

The *Project Conditions (PC)* model will reflect as-built conditions throughout the study reach. Survey data has been collected for both the Rutherford and OVOK reaches. CONTRACTOR has completed incorporating this data into the PC model for Rutherford but will need to incorporate the latest as-built survey data into the OVOK reach.

Each model will be run for the base flood and 0.2% flood runs based on effective hydrology. The hydrology will not be updated for this LOMR.

Deliverables: Digital input and output files for the four hydraulic models described

Task 17.1b – Floodway analysis

CONTRACTOR will model and evaluate the floodway for the study reach starting from the existing floodway extents. The floodway may need to be adjusted using an equal conveyance reduction strategy to meet a 1-ft maximum surcharge between the floodway and the base flood per FEMA requirements. Iterative modeling analysis may be required to establish a floodway that meets the surcharge limit.

Deliverables: Digital input and output files for the floodway model

17.2 Floodplain Mapping

CONTRACTOR will map the 1%, 0.2%, and floodway extents for the study reach. Extents will be based on 2014 LiDAR. CONTRACTOR will review the floodplain maps with the COUNTY to identify ground features that may affect flood extents, such as FEMA certified berms or levees. The revised flood hazard extents will be tied into the effective FEMA flood hazard extents within 5% of the width per FEMA requirements.

Deliverables: Digital shapefiles for the 1%, 0.2% and floodway extents for post-project conditions

17.3 Narrative

CONTRACTOR will draft a written description detailing the purpose of the LOMR application, the scope of the proposed/as-built projects, and the methodology used to analyze the project effects and conduct floodplain mapping. The narrative will include water surface elevation data tables to demonstrate that FEMA requirements are met for the hydraulic models. A draft narrative will be provided to the COUNTY and following one round of consolidated comments from all reviewers at the COUNTY, CONTRACTOR will prepare a final narrative. The final narrative will be included with the LOMR submittal to FEMA.

Deliverables: Draft narrative. Response to comments. Final narrative.

17.4 Property owner notification and floodway notices

When submitting a LOMR (or CLOMR) that will change effective information for the base flood and/or floodway, FEMA requires property owner notification and floodway notices. Per the MT-2 submittal instructions:

- **“Property owner notification:** If the revision results in any widening/shifting/establishing of a base floodplain and/or any increasing/establishing of Base Flood Elevations (BFEs), please provide copies of the individual legal notices sent to all property owners affected by increased flood hazards.
- **Floodway Notice:** If the revision results in changing or establishing regulatory floodway boundaries, please provide a floodway public notice or a statement by your community that it has notified all affected property owners, in compliance with the National Flood Insurance Program (NFIP) regulations at 44 CFR §65.7(b)(1).”

Both notices can be provided either as individual letters or advertised in a newspaper that has distribution within the local community. CONTRACTOR will work with the COUNTY to identify the preferred notification format. CONTRACTOR will then provide draft notification language and final language following COUNTY review. COUNTY will distribute the notices.

Deliverables: Draft and revised text for property owner notification and floodway notice

17.5 Compile As-built Plans

As-built drawings are required to be included with the LOMR submittal. The COUNTY has contracted as-built surveys and as-built plansets will be provided by the COUNTY contractor to include with the submittal.

Deliverables: PDF of as-built plans (prepared by COUNTY contractor)

17.6 Topographic Workmap and annotated FIRM

CONTRACTOR will develop a topographic workmap which will include boundaries of the 1%- and 0.2%- annual-chance floodplains and regulatory floodway; location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; certification of a registered professional engineer registered in California; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.). CONTRACTOR will stamp and sign the workmap. CONTRACTOR will also prepare an annotated FIRM exhibit showing the effective data, extent of revision, and revised flood hazard areas.

Deliverables: PDF and digital format of topographic workmap and annotated FIRM

17.7 LOMR submittal and Review

Task 17.7a – Submittal and review (COUNTY)

CONTRACTOR will package all components of the LOMR submittal and deliver to the COUNTY for review. The package will include the MT-2 application forms, hydraulic models, topographic workmap, annotated FIRM, as-built planset, property owner notification, floodway notice, and project narrative. A draft will be submitted to the COUNTY. COUNTY will provide one round of consolidated comments and CONTRACTOR will submit a revised version for COUNTY approval.

Task 17.7b – Submittal and review (FEMA)

Following approval from the COUNTY, CONTRACTOR will submit the LOMR to FEMA through their online Letter of Map Change platform. CONTRACTOR will serve as the LOMR Requestor and provide the Engineer's certification, and that the "community official responsible for floodplain management" signature will be provided by the COUNTY. CONTRACTOR will complete the online submittal for a 'LOMR Based on Bridge, Culvert, Channel, Hydrology, or Combination Thereof'.

Deliverables: Draft and final LOMR packages to COUNTY. Draft and final LOMR packages to FEMA.

17.8 Project Management and Meetings

CONTRACTOR will hold meetings with the COUNTY as needed to discuss progress and project needs. CONTRACTOR will hold six meetings with the COUNTY over the course of the LOMR development, submittal, and review process. This task also includes general project management, invoicing, internal coordination, and progress reporting.

Deliverables: Progress reporting with monthly invoices.

BUDGET

The attached table (Exhibit B-6) provides CONTRACTOR's estimated budget for each of the tasks described above. As it is difficult to estimate the level of effort required for this scope, CONTRACTOR recommends compensation on a time and materials basis, not to exceed the total estimated budget of \$4,652,235 without prior authorization. Please note that actual distribution of charges may differ from the estimate provided in the attached table.

CONTRACTOR will invoice monthly for actual time and materials according to the rate schedule included in Exhibit B-6.

SCHEDULE

CONTRACTOR anticipates that work on the Project will be completed on an annual basis to support construction phases including revegetation through the 2021 - 2022 construction season. CONTRACTOR assumes that work in preliminary tasks will be initiated in October 2012 to support project development through spring 2013. Detailed topographic surveys will be performed annually to support final design between 2014 and late 2018. CONTRACTOR will update the project schedule as the project progresses to track the project schedule. (Please note that significant delays in the project schedule could affect CONTRACTOR'S ability to perform the work within the budget presented herein.)

II. COMPLIANCE WITH GOVERNMENT CODE SECTION 7550. As required by Government Code section 7550, each document or report prepared by CONTRACTOR for or under the direction of COUNTY pursuant to this Agreement shall contain the numbers and dollar amounts of the Agreement and all subcontracts under the Agreement relating to the preparation of the document or written report. The Agreement and subcontract dollar amounts shall be contained in a separate section of the document or written report. If multiple documents or written reports are the subject of the Agreement or subcontracts, the disclosure section may also contain a statement indicating that the total contract amount represents compensation for multiple documents or written reports.

EXHIBIT “B-6”

COMPENSATION AND EXPENSE REIMBURSEMENT

RATES*

Senior Principal Engineer, \$ 265 per hour
Principal Engineer, \$ 240 per hour
Associate Principal Engineer, \$ 205 per hour
Senior Associate Engineer, \$ 175 per hour
Associate III Engineer, \$ 160 per hour
Associate II Engineer, \$ 150 per hour
Associate I Engineer, \$ 140 per hour
Hydrologist II, \$ 125 per hour
Hydrologist I, \$ 110 per hour
Senior Hydrographer, \$ 115 per hour
Hydrographer, \$ 100 per hour
Graphics / CADD Production, \$ 100 per hour
Desktop Publishing, \$ 100 per hour
Technical Administrative, \$ 85 per hour
Clerical, \$ 65 per hour

* All expense rates are limited to those set by the California Department of Personnel Administration

BREAKDOWN BY TASK

<u>Task</u>	<u>Description</u>	<u>Budget</u>
1	Concept Refinement and CEQA Support	\$109,900
2	Landowner Coordination	\$96,440
3	Topographic Survey	\$395,445
4	Geotechnical Analysis	\$220,200
5	Hydraulic Analysis (Groups A, B, C and D)	\$303,900
6	Basis of Design	\$71,700
7	30%-Complete Preliminary Design	\$37,800
8a	Group A: Final Design (RAs 23, 22, & 21) including Revegetation	\$133,000
8b	Group C: Final Design including Revegetation	\$283,900
8c	Group B: Final Design including revegetation (RAs 20, 19, 18, 17, & 15)	\$246,030
8d	Group D: Final Design including Revegetation (RAs 10, 9, 2a, 2b, & 1)	\$223,780
8e	Group D: Final Design including Revegetation (RAs 7, 4, 4a/4b, 3, & Neverbend)	\$161,300
9	Permitting	\$513,250
10	Project Coordination	\$243,300
11	Preconstruction Monitoring & Surveys	\$251,846
12	Bidding & Construction Support	\$333,320
13	As-Needed Technical & Design Services	\$321,090
14	Archaeological Recovery and Treatment Plan (Site 21)	\$116,900
15	Archeological Construction Monitoring at Site 21	\$156,600

16	Archaeological Investigations	\$386,520
17	Combined Rutherford and OVOK LOMR: LOMR and FEMA Consultation	\$201,500
Total Professional Services		\$4,807,720
Total Expenses		\$88,815
Total Not to Exceed		\$4,896,535