Appendix 3C –

Elk River Recovery Assessment Project Description and Funding Request Documentation

February 6, 2013

Liz Haven, Deputy Director
Division of Financial Assistance
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Dear Ms. Haven:

Subject: Cleanup and Abatement Account request for $475,030 for the Elk River Watershed, FAAST Personal Identification No. 25440

The North Coast Regional Water Quality Control Board (Regional Board) submits for your consideration this application for monies from the Cleanup and Abatement Account (CAA) to fund the Elk River Recovery Assessment and pilot project for sediment remediation in the Elk River watershed (Elk). The Elk River watershed is listed under Section 303(d) of the Clean Water Act as impaired due to excess sedimentation. A Total Maximum Daily Load (TMDL) for sediment is currently being completed.

A collective of watershed stewards, including Regional Water Board staff, has developed a strategy for assessing instream stored sediment in the middle reaches of the Elk River watershed and piloting three potential sediment remediation techniques. This is in preparation for the future design and implementation of what is likely to be a large-scale sediment remediation, necessary to correct ongoing flooding and nuisance issues in the middle reaches of the Elk River watershed. The proposed Elk River Recovery Assessment is described in Attachment A and includes a total budget of $583,447. The three proposed pilot projects are described in Attachment B and include a total budget of $276,800. Of this, the Regional Water Board is requesting from the CAA: $401,437 for the Elk River Recovery Assessment and $73,593 for one of the pilot projects (i.e., mechanical sediment removal at the Wrigley Property) for a total funding request of $475,030.

Other funders of the Elk Recovery Assessment include: California Coastal Conservancy ($100,000), Humboldt Redwood Company ($72,010), and the Redwood Community Action

Agency ($10,000). Humboldt Redwood Company has also pledged $40,000 to the pilot sediment remediation project planned on the Wrigley property. They also, as you know, paid $330,000 into the CAA in 2009. A funding request to the Integrated Regional Water Management Planning Program (IRWMP) and/or the Fisheries Restoration Grant Program (FRGP) will be submitted later this year by CalTrout (project manager) for the remaining two pilot sediment remediation projects. See Attachment C for a comprehensive project budget.

During its August 2012 meeting, the North Coast Regional Water Quality Control Board (Regional Water Board) adopted Resolution No. R1-2012-0079. This Resolution directed staff to submit a request to the State Water Resources Control Board (State Water Board) for $401,437 from the CAA to initiate the Elk River Recovery Assessment. (See Attachment D for the Resolution). Regional Water Board staff and Board members met on November 1, 2012 with staff and Board members from the State Water Board to discuss the funding request. During that meeting, State Water Board staff and Board members 1) recommended that the funding request be increased to include a pilot project and 2) raised several key points requiring further elaboration. As a result of the meeting, the Regional Water Board has expanded its funding request from $401,437 to $475,030 so as to include a pilot project on the Wrigley property (e.g., mechanical sediment removal). Staff has also addressed the key points raised in a supplement to this letter contained in Attachment E. The supplement includes:

- An elaboration on the point that existing excessive instream stored sediment represents an "unforeseen" condition.
- Further clarification on how the existing excessive instream stored sediment causes nuisance conditions under Porter-Cologne.
- Addressing the concern about setting a precedent of using CAA funds for the removal of excess instream stored sediment and to better understand how the Elk River watershed is different from other sediment-impaired waterbodies.

With this, we believe our request for $475,030 from the CAA for the Elk River watershed is complete. We appreciate your consideration of our request. If you have any questions regarding the project, please feel free to contact Alydda Mangelsdorf of our staff at alydda.mangelsdorf@watersheds.ca.gov or (707) 576-6735.

Sincerely,

Matt St. John
Executive Officer

130206_ACW_CAARequest

Attachments

A. Elk River Recovery Assessment
B. Proposed Pilot Projects
C. Comprehensive Budget
D. Resolution No. R1-2012-0079
E. Supplemental Information

cc:

Tam Doduc
Steven Moore
Tom Howard
David Noren
Geoff Hales
Bill Massey

Elk River Recovery Assessment to Restore Beneficial Uses and Abate Nuisance Flooding Conditions, Elk River, Humboldt County, CA

February 4, 2013

Contact information

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Introduction

Elk River is impaired by fine sediment that originated primarily from discharge of waste associated with industrial timber harvest activities during the 1988-1997 time period. Impairments include fine sediment with turbidity and channel deposits degrading fisheries habitat, domestic and agricultural supply. Nuisance flooding conditions have resulted from reduced channel capacity associated with stored instream sediment deposits in the Middle Reach of the watershed. Development of the Elk River Sediment Total Maximum Daily Load (TMDL) is underway, along with numerous early implementation efforts. The reduction in channel capacity due to the instream sediment deposits is so severe in the Middle Reach of the watershed that the increased flood frequency and magnitude constitutes a nuisance condition that poses health and safety risks to residents. This nuisance condition must be addressed by the TMDL implementation program.

Direct recovery actions in the Middle Reach of Elk River, combined with sediment load reduction in the watershed, may be necessary to restore ecosystem functions, abate nuisance flood conditions, and recover beneficial uses. The primary objective of any direct recovery action in the middle reach would be to contain bankfull flows (1.5-2 year recurrence interval), while minimizing any impacts to upstream and downstream reaches, infrastructure, and land uses. Evaluation of the anticipated effects of sediment reduction measures and direct recovery actions is required to inform development of an appropriate and effective approach that integrates actions throughout the affected river channel.

Proposal

This proposal requests $401,437 from the Cleanup and Abatement Account (CAA) to conduct the Elk River Recovery Assessment (Recovery Assessment). The Recovery Assessment is a system-wide analysis of the fate and transport of sediment, including legacy sediment now stored instream; an assessment of the effect on sediment fate and transport from a suite of sediment removal and restoration activities; and the development of an implementation framework that addresses the instream sediment deposits and will lead to recovery of ecosystem functions and beneficial uses in Middle Reach of Elk River. The Elk River Recovery Assessment has broad support from watershed stakeholders who

are contributing cost-shares and in-kind support. The duration of the project is from spring 2013 through winter 2015. The project will:

- Document existing channel morphology and sediment conditions reach-wide (18.5 miles from the top of the Middle Reach Elk River downstream to Humboldt Bay, Figure 1);
- Develop, calibrate, and validate a reach-wide hydrodynamic and sediment transport model;
- Conduct analyses to assess the trajectory of the system under (1) existing sediment loads, (2) reduced sediment loads, and (3) a suite of broad recovery actions in combination with reduced sediment loads;
- Establish a robust monitoring network to track long-term system recovery;
- Prioritize a suite of direct recovery actions independently and in conjunction with sediment reduction measures already being designed and/or implemented; and
- Obtain peer review from a pre-established Technical Advisory Committee.

Background

Elk River was included on the Clean Water Act Section 303(d) List of impaired waters in 1998 on the basis of excessive sedimentation. Accelerated timber harvest and road construction activities, beginning in 1986, followed by large storm events in 1995–1998, caused unprecedented discharges of sediment and organic debris and resulted in major geomorphic changes in the Middle Reach of Elk River, near the confluence of North Fork and South Fork. The channel filling degraded salmonid habitat by filling pools and burying spawning gravels and large wood. There has been a coincident increase in the frequency and magnitude of flooding, affecting the safety and livelihood of residents in the Middle Reach of Elk River. Records indicate that stored instream deposits have reduced channel conveyance capacity in the upper Mainstem Elk River by 60% and the North Fork Elk River now overtops its banks an average of four times per year. The instream deposits are largely a result of discharges of waste from non-point source activities (timber harvest activities) from 1988-1997. In 1998, mechanical removal of instream sediment deposits was considered too environmentally damaging by Regional Water Board staff[1]. However, the impacted geomorphic and hydraulic conditions have resulted in lower conveyance capacity, lower flow velocities, and ongoing sediment deposition that exacerbated nuisance flooding conditions in the Middle Reach of Elk River[2]. Residents now experience flooding conditions on an average of four times per year.

In 2004, the Regional Water Board received a petition from 64 affected Elk River residents requesting cleanup (dredging) of the instream sediment deposits to abate the nuisance flooding conditions and recover beneficial uses of water. The Regional Water Board

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[1] Based upon findings in sediment source inventory reports and treatment workplans submitted by Pacific Watershed Associates on behalf of Pacific Lumber Company.

[2] North Coast Regional Water Quality Control Board. 2009. Draft Elk River Sediment TMDL Staff Report.

rejected the petition citing the need for a lead entity and a feasibility study prior to initiating a major channel modification effort. Since then, CalTrout has stepped forward as a ready and willing, viable lead entity. This proposed project, the Elk River Recovery Assessment, will test the response of the system to a suite of direct recovery actions. The Recovery Assessment will result in a peer-reviewed sediment reduction implementation framework that is scientifically defensible and has the best prospect of leading to recovery of beneficial uses, satisfying the Regional Water Board's previous requirement for a feasibility study.

In 2008, a technical advisory committee (TAC) comprised of experts in fluvial geomorphology and river restoration was formed, in part, to evaluate sediment information in Elk River and its adequacy for informing recovery actions[3]. The TAC concluded that existing information about physical processes and aquatic habitat was insufficient to evaluate recovery alternatives. The TAC also concluded that large-scale projects implemented to enhance and stabilize different properties or reaches would require a well-integrated and scientifically-based design effort to ensure that actions achieve the desired effects and avoid unintended consequences in adjacent reaches. Regional Board staff had previously found that such a scientifically-based evaluation would also be necessary for permitting implementation of recovery actions.

The TAC was asked to develop an approach that could lead to the identification of restoration actions to address the channel impairments in the Middle Reach of Elk River. Potential recovery actions could include dredging, new channel construction, off-channel detention basin, levee construction or modification, vegetation management, infrastructure improvements, creation of inset floodplains, high flow channels, and placement of in-stream large woody debris. The approach identified by the TAC includes construction, calibration, and validation of hydrodynamic and sediment transport models suitable for assessing the effects of a range of actions individually, collectively and under a range of flows, sediment loads, and time frames. Such a system's approach is appropriate and necessary given the severity and persistence of the instream deposits, especially in the Middle Reach of Elk River. An ecosystem based approach is also necessary to develop a successful clean-up plan. The TAC's approach was incorporated into funding proposals submitted to Department of Fish and Game's Fisheries Restoration Grant Program in 2009 and 2010, with a significant cost-share from Humboldt Redwood Company (HRC)[4]. While

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[3] The TAC was convened by Redwood Community Action Agency (RCAA) with funding support from a Proposition 50 Grant (Agreement No. 06-289-551-0) Humboldt Bay Watershed Sediment Reduction, Monitoring and Salmon Habitat Implementation Program

[4] Of note, when Humboldt Redwood Company (HRC) took over upon bankruptcy of Pacific Lumber Company, they were held liable for penalties levied on Palco for violations of Cleanup and Abatement Orders in Elk River and Freshwater Creek. Regional Water Board Staff attempted to divert some of the penalties toward a supplemental environmental project (SEP) to support the modeling efforts; however other cost shares were not available at that time. As a result, in 2009, HRC paid a civil liability of $330,000 into the cleanup and abatement account.

the proposal ranked high regionally, it did not receive funding during the statewide review of projects.

A pilot modeling effort was conducted by Northern Hydrology and Engineering (NHE) and Stillwater Sciences in a portion of the middle reach of Elk River in 2011/2012 to test the performance of the proposed models and the adequacy of the existing data. The pilot effort found that the models offered reasonable estimates of the observed water surface elevations and scour and fill within the modeled reach, and could provide appropriate and useful tools for assessing recovery actions at a broader scale (NHE and Stillwater, 2012). This request is for CAA funds to expand the modeling to assess the entire Middle Reach of Elk River as well as the Lower Reach down to Humboldt Bay and to identify recovery actions, that in combination with reduction in sediment loads, will lead to a sustainable stream system capable of supporting beneficial uses and abating the current nuisance flooding conditions in the Middle Reach.

In February 2012, Regional Water Board co-sponsored an Elk River Restoration Summit[5] and presented an approach to identify recovery actions. There was significant support for this proposed assessment strategy by the attending landowners, permitting agencies and funders. However, participants recognized that funding the Recovery Assessment through state and federal grants would be difficult because the necessary project costs exceed funding amounts typically awarded through planning grants, and the project does not qualify for money earmarked specifically for implementation. As such, the CAA was identified as the best option for funding the Recovery Assessment. The resulting implementation actions will be readily translated into project proposals for implementation funding from State and Federal sources, with anticipated landowner partnerships and cost shares. In addition to private landowner funding contributions, State and Federal funding sources are likely to include California Department of Fish and Game's Fisheries Restoration Grant Program, US Fish and Wildlife Service (USFWS) Partners Program, the Nation Oceanic and Atmospheric Association Restoration Center, US EPA 319(h), USFWS North American Wetlands Conservation Act, and Natural Resources Conservation Service.

The Recovery Assessment builds on an existing rigorous monitoring network maintained by landowners in the Upper and Middle Reaches of Elk River. Data collection in the Lower Reach is currently limited, as it has not been the focus of Regional Water Board regulatory efforts. However, to ensure that recovery actions are appropriately identified and evaluated, the Recovery Assessment includes geomorphic and water quality data collection. These new locations will be included in the long-term network ensuring a robust monitoring program to track TMDL effectiveness and evaluate the success of recovery actions.

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[5] The Restoration Summit was co-sponsored by Regional Water Board staff and RCAA with funding support from a Proposition 50 Grant (Agreement No. 06-289-551-0) and Department of Conservation.

The project team is uniquely qualified to conduct the Elk River Recovery Assessment. Additionally, they are of good value, as all parties have a local presence, minimizing the need for project-related travel costs. All have maintained excellent working relationships with stakeholders, demonstrating integrity and objectivity in a watershed that has long been divided via the timber wars and scientific disagreement. This team has continually worked toward solutions and civil scientifically-based discourse. The Elk River Recovery Assessment has broad support from watershed stakeholders, including affected residents, HRC, and permitting agencies.

CalTrout is non-profit agency with the organizational capacity to be a viable lead in implementation of recovery action in Elk River. They have an excellent track record with the Regional Water Board and a demonstrated ability to work with landowners, large and small. Their expertise in fisheries recovery is crucial to ensuring that the recovery actions result in improved ecosystem fisheries enhancement as well as abatement of nuisance flooding. CalTrout is ready to take the results of the Recovery Assessment and craft an implementation strategy, then pursue funding via implementation grants.

Over the past decade Northern Hydrology and Engineering (NHE) has assisted the Regional Water Board with technical evaluations of hydraulic and flooding conditions in Elk River (Anderson, 2001; Patenaude, 2004; NHE and Stillwater, 2012), including significant cost share via informal consultations with Regional Water Board staff on the approach to identify recovery actions. Their unique knowledge of Elk River hydrodynamics and sediment transport, data collection and evaluation, and the available modeling tools and their application to Elk River make NHE uniquely qualified to conduct the Recovery Assessment. The experience of conducting the pilot modeling serves to reduce the up-front costs associated with conducting the Recovery Assessment. Additionally, NHE has an excellent track record of tackling difficult permitting issues, resulting in site specific designs that ensure environmental protection.

Stillwater Sciences has led scientific evaluations of the unique geologic and geomorphic processes in Elk River (Stallman, 2004; Stillwater, 2005). They have extensive experience in working with the LiDAR data from the watershed, a fundamental Elk River topographic data set. Stillwater has consistently and effectively served a support role to Regional Water Board staff in developing a strategy for recovery of Elk River via sediment production and fate analyses.

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The proposed project satisfies a number of the CAA Program Preferences:

- *Emergency Cleanup Projects – Public Safety (Strategic Goals 1, 2, 3, and 4)*
  The nuisance flooding constitutes a significant health and safety risk to residents within the Middle Reach of Elk River.
- *Cleanup and/or abatement of 2006-listed water bodies that will help to implement a Total Maximum Daily Load (TMDL). (Strategic Goal 1)*

The TMDL implementation program must address the instream deposits to ensure recovery of beneficial uses and abatement of nuisance conditions. The assessment described herein will identify necessary implementation actions to ensure the system recovers.

- *Cleanup and/or abatement of non-point source legacy pollutants when the source(s) of the pollution have been mitigated. (Strategic Goals 1, 2, 3, and 4)*
  The instream deposits are as a result of past discharges of sediment from industrial timber harvest activities. Sediment reduction measures have been underway in Upper Elk River since 1997. Currently a regulatory framework is in place to identify and treat existing sources of sediment and avoid creation of new sources. The TMDL implementation framework proposes refinements to the existing program on an aggressive timeframe to further reduce the management loads to meet water quality standards.
- *Cleanup and/or abatement of contaminated site when the viable responsible party has not been identified (Strategic Goals 1, 2, 3, and 4)*
  Two of the primary landowners responsible for the source of legacy pollutants are no longer in business: Pacific Lumber Company and Elk River Timber Company. Successful and expeditious assessment and cleanup requires a collaborative approach to restoration with broad stakeholder buy-in as represented by the proposed project. Penalties associated with historic waste discharge violations have been paid into the Cleanup and Abatement Account and may be reasonably applied to the proposed project, in lieu of pursuing litigation of cleanup and abatement requirements.
- *Projects that promote habitat restoration through non-profit organizations that collaborate with the Regional Water Boards and encourage public outreach and education. (Strategic Goals 1, 2, 3, and 4)*
  The funds are requested for CalTrout (a non-profit), in coordination with the Regional Water Board, to receive a grant or contract to promote habitat restoration, abate nuisance conditions, and rebuild collaborative working relations among landowners and residents in the Elk River watershed.

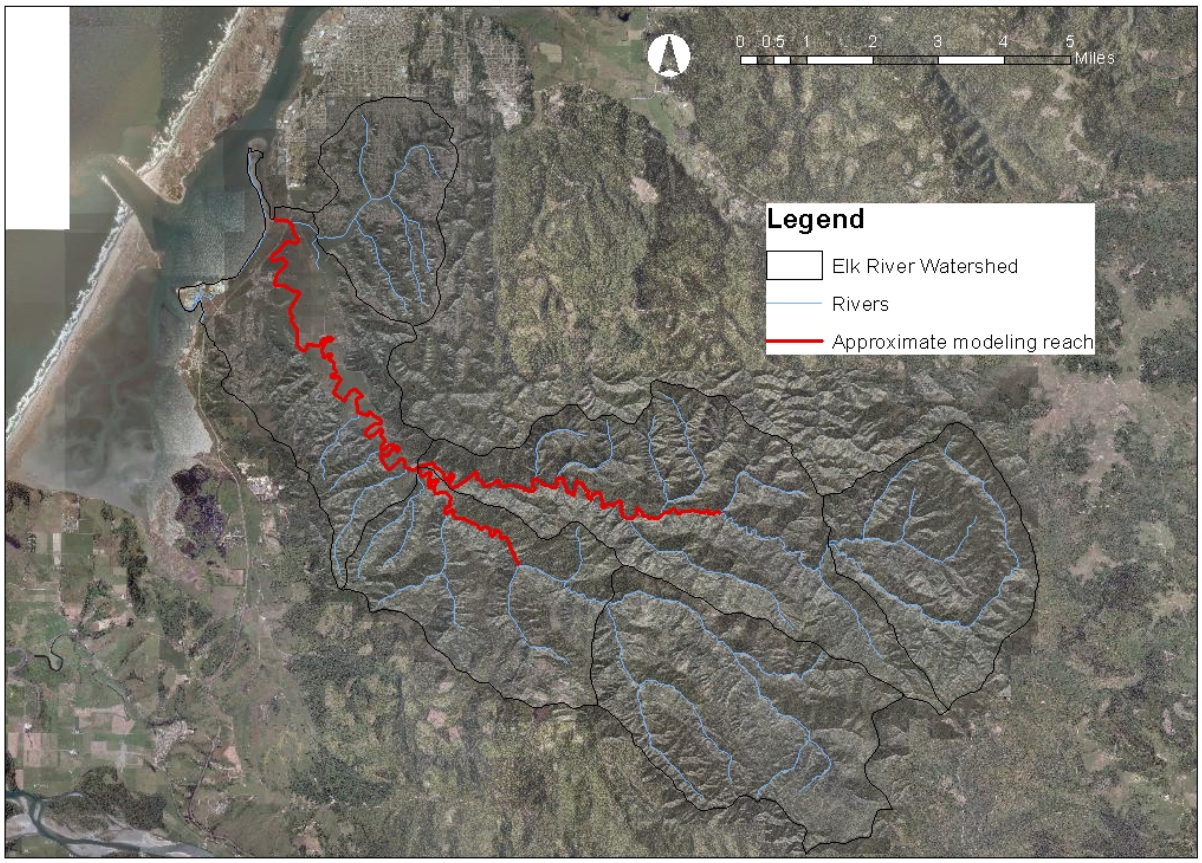

Figure 1: Map of Elk River watershed with modeling reach identified.

Scope of Work
Work is currently scheduled to begin on this project in spring 2013 with completion scheduled for the winter of 2015. The proposed schedule will be adjusted, depending on the timeframe necessary to secure funding and initiate a contract.

Task 1 - Project Team Project Management
Task Lead: Cal Trout
Projected Completion Date: December 2015

Project management will consist of managing the overall project. At a minimum, project management activities will include:

- Contract and subcontract development
- Budget tracking and reporting,
- Invoicing and required progress reports,
- Facilitation of project team and technical advisory committee meetings,
- Landowner contact and outreach as needed, and
- Meeting deliverable and time-frame schedules.

Task 1 Cost = $22,500

Task 2 – Update and Revise Existing Data
Task Participants: Jack Lewis and Northern Hydrology and Engineering
Projected Completion Date: December 2013

This task is primarily associated with updating and revising discharge and suspended sediment concentration (SSC) estimates on the North Fork and South Fork Elk River based upon refinements to stage-discharge relationships and storm-based regressions of turbidity and SSC. These revised discharge and SSC estimates will ultimately be used to develop upstream boundary conditions for the hydrodynamic and sediment transport model. The revised and updated discharge and SSC data will rely on existing Humboldt Redwood Company and/or Salmon Forever data. Specific work products include:

A. Continuous discharge record for North Fork and South Fork Elk River for Water Year 2003 to 2013.
B. Continuous SSC record for North Fork and South Fork Elk River for Water Year 2003 to 2013.

Task 2 Cost = $34,668

Task 3 – Implement In-Channel Data Collection
Task Participants: Northern Hydrology & Engineering, Stillwater Sciences and USFS Redwood Sciences Laboratory.

Projected Completion Date: A-F: December 2013, G-H: August 2014

Task 3 involves collecting in-stream channel data for defining existing conditions of the project reach. Data collection efforts will focus on filling in gaps in channel topography, including: surveying a thalweg profile and cross sections (as required), collecting and analyzing bed, bank and floodplain sediment samples to define particle size distributions within the project reach, identifying and mapping hydraulic and geomorphic controls in the reach, mapping dominant riparian and floodplain vegetation to characterize bank and overbank roughness elements, and assessing the abundance, quality, and distribution of salmonid habitat. This data collection effort will be done at the spatial resolution necessary to adequately support the grid scale of the proposed hydrodynamic and sediment transport (HST) model. Deliverables for this task include at a minimum:

A. Surveyed thalweg profile of the proposed project reach.
B. Establishment of a cross-section network within the entire project reach for defining existing conditions and post-project monitoring.
C. Surveyed cross-sections of the project reach to adequately define the existing channel bed conditions at the appropriate scale for the HST model.
D. Mapping key geomorphic features of the project reach, such as bed and bank composition, roughness elements, bank slumps, large debris jams, and general bed and bank vegetation features.
E. Collecting and analyzing approximately 50 bed, bank and floodplain sediment samples for particle size distribution of the project reach.
F. Analyzing and mapping the dominant bank and floodplain vegetation for the HST model.
G. Resurvey cross-sections following one winter season to define 1-year sedimentation patterns within the project reach.
H. Assess salmonid habitat availability and habitat impairment resulting from sediment transport and deposition.

Task 3 Cost = $160,656

Task 4 – Implement Water Data Collection
Task Participants: Northern Hydrology and Engineering, Stillwater Sciences, and USFS Redwood Sciences Laboratory.
Projected Completion Date: August 2014

Task 4 consists of collecting stage, velocity and depth integrated SSC data at key locations within the project reach. Conductivity (salinity), temperature and depth (CTD) will also be collected at one location within the Elk River estuary. These data will be used to adjust discharge and SSC data developed in Task 2 for use as downstream boundary conditions for the HST model. Collected data will also be used for calibration/verification of the HST

model at internal locations within the modeling domain. The depth integrated SSC samples will be processed for total SSC and particle size distribution. The water data collection effort will be done at the spatial resolution necessary to adequately support the HST modeling effort. Deliverables for this task include at a minimum:

A. Approximately 6-months of CTD data will be collected at a central location in the Elk River estuary.

B. Continuous stage data for 6 to 8-months at approximately 6 to 8 locations within the project reach.

C. Wading discharge measurements, as required, at the stage recording sites.

D. In-channel velocity measurements at 3 to 5 locations within the project reach during 1 to 2 high discharge events.

E. Collection and analysis of approximately 8 depth-integrated SSC samples at about 10 locations within the project reach (80 samples total). The collected SSC samples will be analyzed for total SSC and particle distribution.

Task 4 Cost = $70,555

Task 5 – Hydrodynamic and Sediment Transport (HST) Modeling
Task Participants: Northern Hydrology and Engineering and Stillwater Sciences
Projected Completion Date: December 2014

Task 5 consists of implementing the proposed HST modeling work for this project. The HST model will assess the trajectory of the system (project reach) for (1) existing sediment loads, (2) reduced sediment loads (based upon TMDL loading capacity estimates to be provided by North Coast RWQCB), and (3) reduced sediment loads with broad scale restoration approaches. The HST model grid will be developed at a resolution adequate to assess system trajectory of the entire project reach, and provide a balance with computational efficiency for long-term simulations (e.g. 10+ years). An assessment of the appropriate modeling framework will also be conducted prior to HST model development. Deliverables for this task include at a minimum:

A. The project team will develop a conceptual model of the Elk River project reach.

B. The project team will select the appropriate modeling framework and approach.

C. Data from Tasks 2, 3 and 4 will be used to develop model boundary conditions, which include project reach topography and bathymetry; upstream discharge. SSC, salinity and temperature data for the North Fork and South Fork Elk River and tributaries; downstream water levels, salinity and temperature; bed, bank and floodplain sediment properties; and bank and floodplain vegetation data.

D. HST model grid development and calibration at the appropriate resolution to assess system trajectory.

E. HST model validation and sensitivity analysis of key model parameters.

F. The calibrated and validated HST model will be used to assess trajectory of the project reach for existing sediment loads; reduced sediment loads; and reduced sediment loads with broad scale restoration actions.

Task 5 Cost = $159,828

Task 6 – Reconvene the Technical Advisory Committee (TAC)
Task Participants: Cal Trout, Jack Lewis, Northern Hydrology and Engineering, Stillwater Sciences
Projected Completion Date: Meeting 1: September 2013; Meeting 2: February 2015

The TAC will be reconvened for two meetings. The first meeting will occur at the beginning of the project. The project team will solicit input from the TAC regarding: 1) the long-term desired channel conditions for the Elk River within the project reach, 2) broad recovery actions that will be evaluated, and 3) the data collection plan and proposed modeling approach. The second meeting will occur following completion of Task 5. This meeting will cover HST modeling approach and projected trajectories for: 1) existing sediment loads, 2) reduced sediment loads, and 3) broad recovery actions in combination with reduced sediment loads. Channel sedimentation trajectories under each scenario will be compared to long-term desired conditions. The TAC and project team will jointly assess the potential for achieving desired channel conditions under each scenario in the short and long-term. Deliverables for this task include at a minimum:

A. A description of the long-term desired conditions for the Elk River.

B. Peer review of the modeling approach and results.

C. An assessment of the expected differences between the projected trajectories and the long-term desired conditions under the three scenarios identified: 1) existing sediment loads, 2) reduced sediment loads, 3) broad recovery actions in combination with reduced sediment loads.

Task 6 Cost = $35,240

Task 7 – Prepare HST Modeling Report
Task Participants: Cal Trout, Jack Lewis, Northern Hydrology and Engineering, Stillwater Sciences, USFS Redwood Sciences Laboratory
Projected Completion Date: Draft Report February 2015; Final Report December 2015.

The final task is preparation of the HST modeling report which will summarize the above tasks. A draft report will be prepared for review and comment by the North Coast RWQCB, TAC and other identified parties as needed. Following the comment period, a final HST modeling report will be prepared for public distribution. Following is a potential HST modeling report table of contents:

1. Introduction, Background, and Goals and Objectives

2. Discharge and Suspended Sediment Concentrations in Elk River and Tributaries

   a. Existing data
   b. Revised continuous discharge record
   c. Continuous SSC record
3. Project Data Collection
   a. Topographic mapping and surveying
   b. Thalweg profile
   c. Geomorphic mapping
   d. Bed, bank and floodplain sediment samples
   e. Intermediate stage, SSC and velocity measurements
   f. Tidal CTD sampling
   g. Salmonid habitat assessment
4. Geomorphic conditions of existing Elk River channel
5. Develop desired channel condition and broad recovery actions
6. Development of Hydrodynamic and Sediment Transport Model
   a. Conceptual model of project reach
   b. HST model selection
   c. Model grid
   d. Boundary conditions
   e. Calibration of HST model
   f. Validation of HST model
   g. Sensitivity analysis of key HST parameters
   h. Develop reduced SSC scenario
7. Results and Conclusions of Hydrodynamic and Sediment Transport Modeling
   a. Existing sediment loads
   b. Reduced sediment loads
   c. Reduced sediment loads with broad scale restoration actions
8. Recommended recovery actions to restore desired ecosystem and water quality conditions.
9. References
10. Appendices

<u>Task 7 Cost = $100,000</u>

References

Anderson, Jeff. October 2001 *Review of "Elk River Flooding Analysis Summary" by PALCO dated August 6, 2001.* Letter from Jeff Anderson to Adona White North Coast Regional Water Quality Control Board.

Northern Hydrology and Engineering and Stillwater Sciences. 2012. *Elk River Hydrodynamic and Sediment Transport Modeling Pilo t Project.* Prepared for Redwood Community Action Agency, Natural Resource Services.

Patenaude, J.R. August, 2004. *Preliminary Assessment of Flooding in Elk River.* Staff report to the North Coast Regional Water Quality Control Board.

Stallman, J. July 2003. *Strath Terrace Genesis in the North Fork Elk River Valley, North Coastal California.* A Thesis Presented to the Faculty of Humboldt State University in Partial Fulfillment of the Requirements for the Degree of Master of Science in the Environmental Systems Graduate Group, Geology Option.

Stillwater, 2007. *Landslide Hazard in the Elk River Basin, Humboldt County, CA.* Prepared for the North Coast Regional Water Quality Control Board.

Attachment B – Proposed Pilot Projects

Elk River Sediment Remediation
Proposed Pilot Projects

Introduction

Elk River is impaired by excessive sedimentation and was listed as Sediment Impaired on CWA Section 303(d) in 1998. Two primary initiatives are underway to promote recovery of Elk River from sediment impairment: (1) the Regional Water Board is developing the Elk River Sediment TMDL, and (2) CalTrout (as project manager) is applying through the North Coast Regional Water Quality Control Board for funds from the State Water Board's Cleanup and Abatement Account ($475,030) and from the Coastal Conservancy ($100,000) to initiate the Elk River Recovery Assessment, including a sediment removal pilot project. Redwood Community Action Agency has contributed $10,000. Humboldt Redwood Company (HRC), the predominant landowner in the basin, has also pledged $80,000 in in-kind services (up to $120,000) plus $32,010 to the project.

The Recovery Assessment will (1) conduct a system-wide analysis of sediment; (2) assess a suite of sediment removal and restoration activities; and (3) develop an implementation framework that promotes recovery of ecosystem functions and beneficial uses in Elk River. CalTrout is also seeking implementation funds from multiple sources to implement several pilot projects. Three project types will be assessed: sediment trapping, sediment removal (along with channel rehabilitation), and vegetation understory removal. Each project will provide valuable information for the Recovery Assessment, demonstrate feasible recovery options, contribute to lowering sediment loads and flood risks, and inform development of an over-arching Recovery Plan for Elk River. The funding request to the State Water Board's CAA includes a request for $73,593 to fund a pilot project (mechanical removal of sediment) to be conducted in the Elk River at a location near the Kristi Wrigley property.

Proposal for Phase 1 Implementation of the Elk River Recovery Assessment: Pilot Sediment Reduction Projects.

In support of the Recovery Assessment, the State Water Board requested pilot implementation projects be included in the next phase of funding. CalTrout will be seeking cost share funds from the Integrated Regional Water Management Planning program (IRWMP) and/or the California Department of Fish and Game's Fisheries Restoration Grant Program (FRGP) to conduct several small-scale pilot implementation projects.

The Recovery Assessment will provide the basis for the design of three moderate-scale pilot projects to be implemented within the middle reach of the Elk River. Implementation projects will be designed to test key assumptions and predictions of the hydrodynamic and sediment analysis, as well as examine several proposed treatment approaches. Three pilot projects are proposed for implementation, which will be refined and designed during the recovery assessment. One is included in the funding request to the State Water Board's CAA (mechanical removal) and the other two will be in the request for IRWMP and/or FRGP monies. The three projects include:

Sediment Retention. This pilot project will design and install a small facility for retention and removal of sediment delivered from upper-basin tributaries, to function as a short-term strategy to prevent delivery of waste sediment to the middle and lower mainstem Elk River. The project will employ an off-channel sediment detention basin and/or an inset floodplain, strategically placed at a tributary mouth within the mid-portion of the watershed. We're provisionally considering Clapp Gulch and/or Railroad Gulch as suitable target sites. The purpose of the design will be to demonstrate the feasibility of sediment trapping and routine removal, as a temporary maintenance activity while upper-basin timber harvest discharge and stored sediment loads are winnowed to acceptable levels.

($113,593 total cost)

Mechanical Removal. This project will design and implement a project to remove approximately 4,000 cubic yards of in-channel and floodplain sediment deposits, then re-contour the channel, banks, and floodplain to enhance flood conveyance and salmonid habitat (in-channel and off-channel rearing). We're provisionally targeting a reach within Kristi Wrigley's property on the lower NF Elk River near the confluence with the SF. This project has landowner support and a cost-share contribution from HRC. The project will demonstrate the feasibility of sediment removal, assess the transport and disposal of waste sediment, evaluate realistic implementation costs, test the system response and longevity to sediment removal, and interpret salmonid habitat quantity and quality resulting from the project.

($113,593 total cost)

Riparian Removal. The 19.3 km (12 miles) of mainstem Elk River downstream of the NF-SF confluence consist of low-gradient, alluvial channel types with dense riparian canopy. The riparian zones, which are predominantly along the top of the channel banks, accumulate the largest net sedimentation of any of the floodplain zones as they are closest to the channel and have the greatest vegetation drag. This project will experiment with riparian vegetation thinning and removal to demonstrate the effect on water surface elevation, water velocities, and stored sediment in the channel and banks. The project will remove understory riparian vegetation only, not large hardwood or conifer tree species. The pilot project will target vegetation treatment along approximately 400 ft. of channel, in a strategic location along the mainstem channel.

($49,614 total cost)

Deliverables

The total cost projections for each pilot project includes all necessary field data collection, engineering design, implementation, and as-built monitoring tailored to evaluate project objectives. Permits for implementation of the pilot projects are expected to be covered under a grant from the California Department of Fish and Game's FRGP. The project engineering designs will be prepared after the data collection and hydrodynamic modeling

tasks are well-developed (not necessarily completed) and the project team has outlined the Recovery Implementation Framework. If FRGP is unable to contribute funding to this project, then project implementation will require CEQA compliance and permits from several agencies, DFG §1600 Agreement, NMFS and FWS ESA consultations, CWA Section 404 Permit, and Humboldt County Grading Permit. These costs will add to the total budget associated with implementation of the three pilot projects. We anticipate implementation of the mechanical sediment removal project during the summer of 2014.

Deliverables will include the following items:

1. Design Technical Memorandum,
2. Engineered construction plans and specifications,
3. As-built plan set, and
4. Monitoring memorandum.

Attachment C – Comprehensive Budget

Elk River Watershed Recovery Assessment and Pilot Sediment Reduction Projects Comprehensive Budget												
Elk River Recovery Assessment												
TASKS		**PROJECT COSTS**							**FUNDING REQUESTS**			
Task #	Task Description	CalTrout (Project Management)	Subcontractors (Design and Implementation)				Operating Expenses	*Task Total*	CAA	HRC	Coastal Conservancy	Redwood Community Action Agency
			Northern Hydrology	Stillwater Sciences	Jack Lewis	Redwood Sciences Lab						
Task 1	Project Management and Outreach	$22,500						*$22,500*	$22,500			
Task 2	Update and Revise Existing Data		$11,040	$3,500	$20,000		$128	*$34,668*	$24,668	$40,000 up to $60,000 (in kind)		
Task 3	Implement Channel Data Collection	$13,500	$51,801	$68,505		$10,000	$16,850	*$160,656*	$135,656			$10,000
Task 4	Implement Water Data Collection		$29,640	$16,692		$16,000	$8,223	*$70,555*	$55,555			
Task 5	Conduct Flow and Sediment Modeling		$126,840	$32,600			$388	*$159,828*	$127,818	$32,010		
Task 6	Convene Technical Peer-Review Committee		$19,480	$15,400			$360	*$35,240*	$35,240			
Task 7	Prepare Implementation Framework Report	$9,000	$47,562	$42,328			$1,110	*$100,000*			$100,000	
Total Recovery Assessment		**$45,000**	**$286,363**	**$179,025**	**$20,000**	**$26,000**	**$27,059**	***$583,447***	**$401,437**	**$72,010**	**$100,000**	**$10,000**

Pilot Sediment Reduction Projects						
TASKS	**PROJECT COSTS**			**FUNDING REQUEST**		
Pilot Project	CalTrout (Project Management)	Design, Implementation and Operating Costs	***Task Total***	CAA	HRC	IRWMP and/or FRGP
Mechanical Sediment Removal (Wrigley Property)	$14,396	$99,197	*$113,593*	$73,593	$40,000 up to $60,000 (in-kind)	$0
Sediment Retention	$14,396	$99,197	*$113,593*	$0	$0	$113,593
Riparian Removal	$4,614	$45,000	*$49,614*	$0	$0	$49,614
Total Pilot Projects	**$33,406**	**$243,394**	***$276,800***	**$73,593**	**$40,000**	**$163,207**
Project Grand Totals						
	CalTrout (Project Management)	Project Costs (Subcontractors—Design, Implementation, and Operating Costs)	TOTAL (All Tasks)	CAA	HRC	All Other Partners
Grand Total	**$78,406**	**$781,841**	**$860,247**	**475,030***	**$112,010***	**$273,207**

* HRC contributed $330,000 to the CAA fund for violations in the Elk River watershed which would ideally be applied to sediment reduction efforts in the basin.

Attachment D – Resolution

California Regional Water Quality Control Board
North Coast Region

Resolution No. R1-2012-0079

Request for Cleanup and Abatement Account Funds for
Elk River Recovery Assessment to
Recover Impaired Beneficial Uses and Abate Nuisance Flooding Conditions
Elk River, Humboldt County

WHEREAS, the California Regional Water Quality Control Board, North Coast Region (hereinafter Regional Water Board), finds that:

1. The Regional Water Board has the primary responsibility for ensuring the protection of the beneficial uses of water and protection against pollution and nuisance conditions from waste discharges in the North Coast Region.

2. California Water Code section 13443, allows for the Regional Water Board to apply to the State Water Resources Control Board for funds from the State Water Pollution Cleanup and Abatement Account (CAA) to assist in responding to a significant unforeseen water quality problem posing an actual or potential public health threat for which the Regional Water Board does not have adequate resources budgeted.

3. Significant volumes of waste, particularly fine sediment were discharged primarily from industrial timber harvesting activities in the Upper Elk River watershed between 1988 and 1997. The discharge of waste resulted in the deposition of several feet of fine sediment over the bed, bank and floodplain of significant portions of the North Fork, South Fork, and mainstem Elk River (the middle reach of Elk River). The sediment deposits are legacy pollutants that remain in place although sediment reduction measures have been underway in Upper Elk River since 1997. Cleanup and abatement of the legacy sediment waste deposits from past timber harvest operations is needed to recover the beneficial uses of water and abate the nuisance flooding conditions in the Elk River watershed.

4. Sediment deposits on the channel bed, banks, and floodplain have reduced the flow capacity in the middle reach of Elk River resulting in an increased frequency and magnitude of flooding. The flooding conditions present in the Elk River watershed constitute a nuisance as defined under the Porter-Cologne Water Quality Control Act. Emergency cleanup of the sediment deposits is needed because the nuisance flooding poses a significant health and safety risk to residents within the middle reach of Elk River.

5. The Regional Water Board has implemented numerous measures to quantify past discharges, to require treatment of threatened discharges and to prevent new discharges from industrial timber lands in Upper Elk River. A sediment Total Maximum Daily Load (TMDL) for Upper Elk River is being developed for consideration by the Regional Water Board in Fiscal Year 2012/2013. The draft TMDL will propose refinements to the existing waste discharge requirements to further reduce management-related sediment loads on an aggressive timeframe necessary to meet water quality standards.

6. The TMDL implementation program will need to address legacy sediment sources now stored as instream deposits. The Elk River Recovery Assessment to Recover Beneficial Uses and Abate Nuisance Flooding Conditions (Recovery Assessment) is needed to identify feasible implementation actions to ensure the TMDL load allocations are achieved, including ecosystem function and flow capacity; abatement of nuisance flooding conditions; and full support of beneficial uses of water. The Recovery Assessment must be scientifically defensible and evaluate the system considering the potential transport and fate of the legacy sediment deposits.

7. Two of the primary landowners from where the sediment originated are no longer in business: Pacific Lumber Company and Scotia Pacific Corporation, and Elk River Timber Company.

8. The Regional Water Board was petitioned in 2004 by sixty-four residents of the Elk River watershed to initiate cleanup of instream stored sediments and abate the nuisance flooding conditions. The Regional Water Board denied the petition citing the need for a lead entity and a feasibility study prior to initiating a major channel modification effort.

9. The Recovery Assessment is designed to satisfy the requirement for a feasibility study and will result in an implementation strategy, including evaluation of a suite of sediment removal and restoration activities necessary to return the middle reach of the Elk River watershed to a trajectory of recovery. CalTrout (a non-profit organization) has agreed to lead the cleanup and abatement effort, including management of the Recovery Assessment and the resulting implementation strategy.

10. Stored sediment deposits are also impairing salmonid habitat as well as domestic and agricultural water supplies. The funds are requested by the Regional Water Board to develop, in combination with CalTrout, an implementation strategy that addresses the instream fine sediment deposits, promotes habitat restoration, abates nuisance conditions, and leads to recovery of ecosystem functions in the middle reach of Elk River.

THEREFORE BE IT RESOLVED THAT the Regional Water Board requests the State Water Resources Control Board to consider this request for Cleanup and Abatement Account Funds to implement the Elk River Recovery Assessment to Recover Beneficial Uses and Abate Nuisance Flooding Conditions, and to authorize the payment of up to $401,437 from the CAA to the Regional Water Board to assist in the identification of implementation actions to cleanup and abate fine sediment deposits in the Elk River watershed.

Certification

I, Matthias St. John, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, North Coast Region, on August 23, 2012.

Original signed by
_____
Matthias St. John
Executive Officer

Attachment E

Supplemental Information
Elk River Recovery Assessment

We are providing this information following the submittal of preliminary materials to State Water Resources Control Board (State Board) staff and after meeting with State Board members and staff on November 1, 2012. Key points of the meeting that are addressed herein include:

- An elaboration on the point that existing excessive instream stored sediment represents an "unforeseen" condition.
- Further clarification on how the existing excessive instream stored sediment causes nuisance conditions under Porter-Cologne.
- Addressing the concern about setting a precedent of using CAA funds for the removal of excess instream stored sediment and to better understand how the Elk River watershed is different from other sediment-impaired waterbodies.

By way of background the proposed project is designed to address a significant water pollution problem which prevents attainment of beneficial uses, including threats to public health and safety that result from increased incidents of annual winter flooding and impacts to domestic water supply. The increased incidents of flooding imperils local residents several times each year by closing roads; trapping upstream residents by blocking access to local services, work and school; blocking upstream access to emergency vehicles; and damaging private property, including homes. In addition, the sediment impairment has eliminated a reliable and affordable domestic water supply.

Like Elk River, many of the forested watersheds in the North Coast Region have been identified as impaired due to excess sedimentation. Past land use activities, consisting mainly of industrial timber harvest, have accelerated the natural rate of erosion by making the landscape more vulnerable to storm events with consequent degradation of instream habitat (e.g., reduced spawning gravel quality, reduced rearing habitat, and narrowed or blocked migration corridors) for salmonids and other aquatic species. Many of these species have now been listed by federal and/or state wildlife agencies as threatened or endangered by extinction. The largest rates of sediment delivery in much of the Region occurred from 1955-1966 during which time tractor yarding (a ground-based timber harvest method) was a common practice and the region was inundated by several large, landscape-altering storm events. As a result, the stream profile of many north coast streams show large "slugs" of sediment which are still moving slowing through the system.

There are four fundamental factors in the Elk River watershed, however, that in combination make the conditions there unique within the Region. First are the natural characteristics of the Elk River watershed, including its geology, stream gradient, and complex tectonics. The watershed is underlain by especially weak, young, highly erodible geology (e.g., the Wildcat Group and Hookton formations) which produce a predominance of fine sediment, primarily silts and sands. The upper Elk is very steep; but, the stream dramatically flattens as the north and south forks meet and drain across the lower plain. Further, the Elk is in the vicinity of the Mendocino triple junction, one of the most

seismically active regions in California. Here, the San Andreas Fault meets the Mendocino Fault and the Cascadia Subduction Zone as a result of the ongoing motion of the North America, Pacific and Gorda plates. The combination of unstable slopes, erodible geology, and steep stream profiles are common in the North Coast; but, are more naturally dramatic in the Elk River watershed.

Second, during Pacific Lumber Company's (PALCO) tenure in the Elk in the period of 1986 to 2008, the rate of harvest was dramatically accelerated, much of it by the clearcut silvicultural method. This left the weak, erodible geology and unstable hillslopes extremely vulnerable to storm events such that unprecedented volumes of this fine sediment were delivered to the Elk River and its tributaries. The draft Total Maximum Daily Load (TMDL) estimates that from 1988-1997, the volume of sediment delivered was 1659% greater than natural sediment delivery and more than 30% higher than any other period estimated. This is in contrast to most other forested watersheds in the North Coast Region where the highest rate of sediment delivery generally occurred during the period of 1955-1966. The logging activity from 1988-1997 in the Elk River watershed produced not a "slug" of fine sediment but a massive "plug" of fine sediment which rather than moving slowly through the system has instead become anchored in place, significantly reducing channel conveyance capacity. The reduced channel capacity has caused more frequent overbank flooding, with ongoing fine sediment deposition on the bed, banks and floodplain. A dense riparian understory has developed that reduces velocities and is very efficient at trapping fine sediment on the banks rather than allowing the channel to route it downstream. Due to severe channel filling associated with timber harvest impacts from 1999 to 2001, the California Department of Forestry and Fire Protection took the unique action of issuing a moratorium on approval of new Timber Harvest Plans in the Elk River watershed. The Regional Water Board commenced efforts to prevent and minimize sediment delivery.

Third, while excess sedimentation has been identified as one of the factors limiting the success of threatened and endangered salmonids throughout the North Coast Region, only in the Elk River watershed has it imperiled the well-being of local residents as well. As mentioned above, the "plug" of fine sediment now resting in the lower gradient reaches of the watershed has so dramatically reduced the ability of the channel to convey water, that even normal winter storms now over-top the bank spilling water and mud across properties, over roads and driveways, and sometimes into houses. Such flooding now occurs an average of four times per winter, leaving behind a mess of mud and debris and damaged infrastructure. During these annual flooding events, residents are trapped on their properties unable to reach local services, work, and school and emergency vehicles, if needed, are unable to access residents.

Finally, the residents in the middle reaches of the Elk historically have relied almost exclusively on surface water from the Elk River for their domestic supply. Municipal supply does not extend to this impacted community, groundwater in the area is reported to be high in iron, and the underlying geology so fine grained as to make the installation and maintenance of wells very challenging and expensive. Many of the historic intake pools are

no longer viable because they are now too shallow as a result of sediment filling. Also, the elevated suspended sediment concentrations now take days to weeks to recover after a storm (whereas, prior to 1993, they took hours to days) and the elevated suspended sediment concentrations damage pumps and equipment. This has resulted in Humboldt Redwood Company (HRC), under a stipulated agreement with the residents in the North Fork Elk River, installing individual water treatment systems that remove sediment and provide reliable domestic water supply, but at a much higher operation and maintenance cost than was previously the case. HRC also voluntarily delivers bottled drinking water to residents on the South Fork and mainstem. However, residents continue to pump from the river to supply water for other household and irrigation purposes; and this remains unreliable. Staff is unaware of any other watershed in the North Coast Region where an alternate water supply has been necessary as a result of severe sediment impairment.

The conditions described above constitute a nuisance under the definition as contained in the Porter-Cologne Water Quality Control Act (Porter Cologne). Porter Cologne §13050(m) says:

"Nuisance" means anything which meets all of the following requirements:

(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property

(2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.

The conditions in the Elk meet each of these requirements. For example, the discharge of sediment from the upper watershed as a result of especially damaging logging practices during the period of 1986 to 1998 has obstructed the residents of an entire neighborhood from their ability to use their property in a safe and free manner. This results in a regular (annual) loss of access to property, periodic property damage, and loss of a reliable, affordable, and safe domestic water supply.

The conditions in the Elk also can be viewed as "unforeseen" in a manner consistent with the State Water Resources Control Board's Administrative Procedures Manual for the Cleanup and Abatement Account. Excessive instream stored sediment is predictably the result of large-scale hillslope activities that have been demonstrated to increase erosion. However, in regulating timber harvest activities, Regional Water Board staff expected in the Elk River watershed, as elsewhere in the region, that the excess stored sediment would slowly scour over time, particularly as upstream sediment sources were better controlled. Since 1997 there has been a program in place in Upper Elk River to identify and remediate management-related sediment discharge sites and great strides have been made in reducing sediment delivery. Data indicate, however, that even though sediment sources have been dramatically reduced and the watershed subject to many large, potentially-

scouring storms, the stream channel, banks, and floodplain nonetheless continues to aggrade.

As part of the TMDL, staff has now calculated the assimilative capacity of the watershed for sediment. Preliminary findings indicate that the instream stored sediment reduces the assimilative capacity of the watershed to such an extent that simply reducing upstream sediment sources will not achieve water quality objectives, protect beneficial uses, or prevent further nuisance. Restoring hydrologic function to the watershed will require not just source control, but instream sediment remediation, as well. The Regional Water Board, in 1998 found that it would be too environmentally damaging to remove the sediment deposits and, in 2004, denied the residents' petition to initiate dredging on the basis that a feasibility study and a viable lead entity were necessary prior to initiating such an effort. Now, the Regional Water Board has sufficient information to conclude that removal of instream sediment and other remediation efforts are in fact fundamentally necessary to the recovery of this watershed; the Recovery Assessment will identify feasible remediation actions, and CalTrout is a viable lead entity.

As described above, many of the watersheds in the North Coast Region have been identified as impaired for sediment. Water quality protection in some of these watersheds requires both a reduction in sediment sources and restoration activities to ensure a more predictable recovery. But, only the Elk River watershed exhibits the collection of factors which make immediate sediment remediation a necessity to protect human health and the environment and abate nuisance conditions. This application for CAA funds for use in the Elk River watershed addresses conditions which are unique in the Region. None of the other sediment TMDLs in the Region have identified the removal of sediment from the system as necessary to achieving the TMDL. Sediment TMDLs generally rely on remediation of sediment sources, improved management practices, habitat restoration, and time. As such, the Regional Water Board does not anticipate the need for CAA funds in other sediment impaired watersheds. It is the dramatic and unique impact on local residents in the Elk River watershed that specifically calls for the use of CAA funds in this case.

One final point is that the Elk River Recovery Assessment has established key partners that are engaged to participate with funding and technical expertise to accomplish the program goals. First, Humboldt Redwood Company, as the new owner of the former PALCO, has been participating with Regional Board staff on the technical aspects of the Elk River technical TMDL development by providing technical studies to help support Regional Water Board efforts. HRC has committed to provide funding and technical expertise for the Recovery Assessment and subsequent implementation efforts. CalTrout has agreed to lead the cleanup and abatement effort, including management of the Recovery Assessment and the resulting implementation strategy. In addition (and because it will lead to implementation actions) funding has been committed from the California Coastal Conservancy to support the Recovery Assessment. Finally the upper Elk River residents that are most affected by the nuisance flooding conditions have voiced support for the Recovery Assessment. In real terms, the Recovery Assessment will set forth the restoration of beneficial uses within the Elk River watershed.