



Trinity River Restoration Program

P.O. Box 1300, 1313 South Main Street, Weaverville, California 96093
Telephone: 530-623-1800, Fax: 530-623-5944

October 22, 2012

Brian Person, Chair
Trinity Management Council
c/o Trinity River Restoration Program
P.O. Box 1300
Weaverville, CA 96093

Dear Mr. Person:

The Trinity Adaptive Management Working Group (TAMWG) held an in person meeting on September 10, 2012, with a follow-up conference call on October 17, 2012. This letter serves to provide you with a summary of those meetings, along with our resulting policy management recommendations, as required by the TAMWG's Bylaws.

During the meeting on September 10, 2012, many comments were made in support of the TAMWG/Trinity Management Council (TMC) joint meeting that was held this past August. The TAMWG believes that the joint meeting was a worthwhile effort, and we look forward to continuing this tradition in order to facilitate optimal communication between our committees.

We learned that the Trinity County Resource Conservation District is developing a "TMC Response Matrix" we believe will serve as a useful tool for monitoring the TMC's responses to the TAMWG's recommendations. In addition, to ensure we thoroughly understand the reasoning behind these responses, **we are requesting that the TMC Chair (or his/her designee) walk through the TMC responses to the TAMWG's recommendations during the "TMC Chair Update" at each TAMWG meeting.**

We received a presentation from the Office of the Solicitor on the structure and parameters associated with a Federal Advisory Committee Act (FACA) Committee, such as TAMWG. We thoroughly appreciated this overview, given our many new members, to ensure we are following the FACA's rules and requirements.

We received an update and status report from each of the Trinity River Restoration Program (TRRP) workgroups and the 2012 water year. TRRP Executive Director, Robin Schrock, provided us with a presentation of the fiscal year (FY) 2012's accomplishments; the TAMWG is very pleased with these accomplishments and believes that Ms. Schrock has done an excellent job in carrying out the TMC's directives.

Given the FY 2013 budget was not available during our September meeting, the TAMWG convened a conference call on October 17, 2012, at which time Ms. Schrock presented us with the draft FY 2013 budget for our review. The TAMWG has three recommendations for the TMC, concerning the Draft FY 2013 budget:

1. If additional funding is available, the TAMWG recommends that the TMC add at least \$500,000 to the Watershed Planning and Implementation Budget for FY 13;
2. The TAMWG requests that the Science Advisory Board review the efficacy of the "Lower Trinity River Sport Harvest Survey" given the limited public access; and ~ 66K
3. The TAMWG recommends the TMC approve the priorities as presented in the FY 13 Budget, with the caveat of the previous two recommendations, above (*please note the attached minority opinion corresponding to this recommendation*).

Lastly, during our September 10, 2012, meeting the TAMWG received a presentation from the California Department of Water Resources and the National Oceanic and Atmospheric Administration (NOAA) on how the water year designations are surveyed and determined. In an effort to ensure the most accurate data is being collected and calculated, the TAMWG requested DWR and NOAA to develop a list of helpful tools or opportunities for the removal of barriers that could aid in their ability to perform snow surveys. The TAMWG received a letter from DWR and discussed a response during our October 17, 2012, conference call. As a result of that discussion, **the TAMWG recommends that the TMC receive the October 9, 2012, letter from DWR to the TAMWG (attached), and take into consideration the issues presented in the letter with regards to the snow surveys.**

We greatly appreciated the TMC's acknowledgement to our June 18, 2012, letter and look forward to your response to the TAMWG's recommendations included herein.

On behalf of the TAMWG, I am available to answer any questions.

Sincerely,



Elizabeth Hadley, Chair

Trinity Adaptive Management Working Group

CC:

Nancy Finley
Ann Garrett
Dave Hillemeier
Roger Jaegel
Emilia Berol
Ed Duggan
Liam Gogan
Tiffany Hayes
Joe McCarthy
Tom Stokely

Curtis Milliron
Mike Orcutt
Sharon Heywood
Gil Saliba
Sandy Denn
Kelli Gant
Paul Hauser
Richard Lorenz
David Steinhauser
Jeff Sutton

Robin Schrock

October 22, 2012

Elizabeth Hadley, Chair
Trinity Adaptive Management Working Group
P.O. Box 1300
Weaverville, CA

Subject: Minority opinion on TAMWG FY 2013 Budget Recommendation to TMC

Dear Elizabeth;

We strongly support a science-based Trinity River Restoration Program (TRRP) that complies with the 2000 Trinity River Record of Decision. We strongly support the goals of the TRRP and believe that the Trinity River still has the opportunity to be a national model for restoration of an aquatic ecosystem that supports robust sport, tribal and commercial fisheries.

We submit you this minority opinion regarding our abstention from the October 17, 2012 recommendation of the Trinity Adaptive Management Working Group (TAMWG) to the Trinity Management Council in support of the funding priorities as presented in the proposed FY 13 budget.

We do not object to the two caveats that funding be increased for watersheds or that the SAB review the efficacy of the Lower Trinity River sport harvest survey. Instead, we have the following concerns with the funding priorities in the proposed FY 13 budget:

- We object to the inclusion of funding for additional channel rehabilitation projects without having the benefit of the long-delayed Phase 1 review being conducted by the Science Advisory Board. Based on the schedule the TAMWG was provided, final design team meetings with the public will be convened prior to receipt of the final Phase 1 report. The budget priorities blindly assume the outcome of the Phase 1 Review. The ROD called for a review of Phase 1 projects following their completion. This has yet to be completed, but millions are planned to be spent in the face of scientific uncertainty and public concern.
- We object to plans to perform additional gravel injections into the Trinity River without the benefit of independent scientific review of past projects. Given the large number of complaints from the public that numerous pools in the Trinity River have been filled with spawning gravel, it behooves the TRRP to investigate and substantiate the concerns before proceeding. To date we have not seen any analysis of how much the pools have filled, even though it was promised months ago. To the best of our knowledge, the Phase 1 review does not address the biological benefits and impacts of gravel injection, nor is there an intention to do so. Despite the fact that no FY 2012 funds are being

provided for this project, we object to gravel injection in 2013 as part of the overall TRRP funding priorities.

- We object to the chronic underfunding of watershed restoration. There is, in part, inadequate funding for watershed planning and restoration because the TMC failed to approve the Watershed Assessment Project in FY 2012. Failure to approve the project resulted in a semi-permanent reduction in watershed funding due to continuing federal budget resolutions. The watershed component of the Trinity ROD was intended to provide \$1.8 million/year of funding in all areas of the Trinity River basin, but has been chronically underfunded due to a bias against work outside of the upper 40 miles of the Trinity River.

In conclusion, we do not believe that the TRRP is proceeding in compliance with the 2000 Trinity ROD. Watershed restoration activities to reduce fine sediment inputs into the Trinity River are long-neglected and chronically underfunded. Mainstem restoration projects and gravel injections are being planned to be constructed without the benefit of independent scientific review in the face of increasing public scrutiny and skepticism.

That being said, we believe that the large fish runs being experienced this year are a direct result of the higher flows that have been implemented in recent years by the Trinity River Restoration Program. Furthermore, the supplemental flows provided to the Lower Klamath River in August and September of this year were important pieces in protecting the large salmon returns moving up the river at that time. We strongly support those higher flows and the involvement of the TRRP to ensure that the water is wisely used to meet the fishery restoration goals mandated by Congress.

Sincerely,

Emelia Berol & Tom Stokely
TAMWG Members

Unique program nationally- support and funding from DC;

DEPARTMENT OF WATER RESOURCES

DIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000



October 9, 2012

Ms. Elizabeth Hadley, Chairman
Trinity Adaptive Management Working Group
City of Redding Electric Utility
777 Cypress Avenue
Redding, California 96001

Dear Chairman Hadley:

This letter is in response to your inquiries on September 10, 2012 at the TAMWG meeting regarding possible solutions to improve snow survey data collection and augment automated climatic data collection of your watershed.

In regards to the snow surveys, of the nine snow courses in the Trinity River watershed, three require the use of Foster's Cabin in order to safely measure the courses. We are working with our partners in the Shasta-Trinity National Forest to finalize access and permits for use of Foster's Cabin. Overnight use of Foster's Cabin is essential for the surveyors since travel to and from the courses is more than one day on skis. Travel to these courses can only be conducted on skis since they lie within the Trinity Alps Wilderness Area and helicopter operations were suspended several years ago for safety reasons. We hope to get permission to perform the necessary cabin refurbishments and repairs in time for the upcoming winter and are working closely with our U.S. Forest Service (USFS) partners to make this happen. Overall, reestablishing the routine measurement of the snow courses in the Trinity River watershed has been going well, thanks in part to our USFS partners and the efforts of Joshua Smith at the Watershed Center in Hayfork. Last year was a bit of an experiment in reestablishing regular measurements and I am sure there will be more lessons learned this coming winter. If there are ways that the TAMWG can assist, I will not hesitate to contact you.

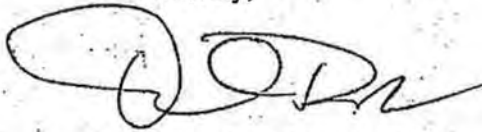
As far as augmenting the automated climatic data collection system in the Trinity River watershed, we are in pretty good shape. We are currently receiving precipitation data for all the required precipitation stations to produce a statistical water supply model and summer maintenance has been performed. This last water year we installed a state-of-the-art weather station at the existing NOAA Cooperative Precipitation Station at Coffee Creek; a location that correlates well to the Trinity River forecast. Generally speaking, the more gauges available to collect data in a watershed, the better a forecast can be and reservoir operations can improve. However, a thorough study should be conducted to determine where additional instrumentation would be beneficial in order to maximize the benefit-to-cost ratio of installing any new gauges. Unfortunately, we do not have the resources to evaluate your watershed climatic station data needs. However, if the TAMWG were to look into this type of investigation, I would encourage the group to include the U.S. Bureau of Reclamation (USBR), the USFS, and our Snow Surveys

Elizabeth Hadley
October 9, 2012
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group in this discussion, since we collectively provide the management of the land and water resources in the Trinity River watershed.

Thank you for your interest in the Trinity River runoff forecasts and for the stewardship that the TAMWG provides within the Trinity River watershed. As opportunities to assist with the snow data collection or other gauging efforts come to our attention, we will be sure to let you know.

Sincerely,

A handwritten signature in black ink, appearing to read 'DR', is written over a large, loopy circular mark.

David Rizzardo, Chief
Snow Surveys Section
Division of Flood Management

cc: Mr. Seth Naman
National Marine Fisheries Service
1655 Heindon road
Arcata, California 95521

Ms. Teresa Connor, PE
Department of Water Resources
Northern Region Office
2440 Main Street
Red Bluff, California 96080

TRRP Implementation Update

Prepared for: Trinity Adaptive Management Workgroup (TAMWG)

By: DJ Bandrowski

Date: October 16, 2012

Design and Implementation Activities:

- 2012 Channel Rehabilitation Projects, Upper Junction City (UJC) and Lower Steiner Flat (LSF) Civil Construction work is complete.
- 2012 Revegetation Designs are being implemented at UJC/LSF Channel Rehab Projects currently with planned completion at both UJC and LSF date of end of calendar year 2012.
- Watershed implementation projects just were awarded August 30th for 2012 projects. Implementation is planned for late fall 2012.

Planning

- Phase I Review being conducted by TRRP Scientific Advisory Board (SAB) is moving forward with good momentum with a draft report planned for roll-out to program partners at end of November/first of December 2012. Program partners will have two week for official comments back to SAB (planned for the first 2 weeks of December. TRRP Management Team will be in close coordination with Technical Work Groups and TMC regarding the roll-out as more information is available.
- Peter Wilcock and Jock Conyngham conducted a workshop in August on the "Stream Project" – Alternative Analysis Framework that will be used as part of the future design process. The development of the "Stream Project" is a collaborative effort between John Hopkins University, National Center for Earth-Surface Dynamics (NCED), USACE-ERDC, and the Intermountain Center for River Rehabilitation and Restoration (ICRRR).
- Lorenz Gulch and Douglas City will be re-designed between September and December 2012 using a revised design process and coordinating closely with the Scientific Advisory Board (SAB) and the pending recommendations from the Phase I Review. Both projects will be planned for implementation during the summer/fall of 2013. Joint stakeholder/Design Team meeting scheduled for November 14th to select the preferred alternative for each project.
- TRRP is in continued Coordination with Dept of Water Resources and Trinity County regarding the new FEMA 100 year floodplain study, which is planned for roll-out in fall of 2012.
- Realty coordination and Rights-of-Entry access documents are underway for fall 2012 monitoring activities
- Bureau of Reclamation archeologists are in the process of conducting 40 mile planning and analysis study for to facilitate future Phase II Implementation projects.

Infrastructure Improvements:

- Well-Grant program has been very successful this fiscal year with 29 new applicants. TRRP office has been very engaged in coordination activities assisting landowners with various steps of the Well-Grant program process including: water rights, environmental permits, facilitating with regulatory agencies, etc.
- Bucktail Bridge Cost Benefit Analysis underway by CH2M HILL in coordination with Design Team and Trinity County Department of Transportation (TCDOT). Cost-Benefit Analysis is approximately 100% complete with a planned finalization scheduled for end of September timeframe and roll-out to Design Team and TMC in October.

Status of the Phase 1 Review

October 22, 2012

Science Advisory Board

John Buffington, Chris Jordan, Mike Merigiano, Jim Peterson, and Clair Stalnaker

Summary of development since the progress report of July 17, 2012.

The work associated with Call 10, the most complex and largest individual scope of work, is largely complete in terms of funding levels. Call 11 is about to be approved and it essentially extends Call 10. Much of Call 10 was devoted to synthesis and report writing, and so is Call 11. The SAB has seen early versions of some of the reports, and has conducted some of our own analysis. The data frame was completed under Call 10 and checked as much as possible by the SAB. It is being used by the support contractor as well as the SAB.

The report being prepared will be comparable to size of the Program's Flow Evaluation Report. The format will be a 20 page (more or less) main report that synthesizes information contained in several so-called "mini-reports" that will be included as appendices. Many of these mini-reports will be larger than the main report and quite detailed. The structure of the main report will follow the elements of the record of decision which includes:

- I. variable annual flow regime
- II. mechanical channel rehabilitation
- III. sediment management
- IV. watershed restoration
- V. infrastructure improvements
- VI. Adaptive Environmental Assessment and Management (AEAM) Program

Much of the report is focused on I, II, III, and VI, followed by a synthesis and recommendations for Phase 2.

Although the guidance from the Program to us in September 2011 focused on the assessment of channel rehabilitation projects and their performance, the expected synergistic influence of such projects on the rest of the channel motivated our expanding the scope to the entire project reach from Lewiston to the North Fork. The discussion section will be organized around the six main objectives of the Program, which are:

- 1) Create and maintain spatially complex channel morphology.
- 2) Increase or improve habitats for freshwater life stages of anadromous fish to the extent necessary to meet or exceed production goals.
- 3) Restore and maintain natural production of anadromous fish populations.
- 4) Restore and sustain natural production of anadromous fish populations downstream of Lewiston Dam to pre-dam levels, to facilitate dependent tribal, commercial, and sport fisheries' full participation in the benefits of restoration via enhanced harvest opportunities.
- 5) Establish and maintain riparian vegetation that supports fish and wildlife, and
- 6) Rehabilitate and protect wildlife habitats and maintain or enhance wildlife populations following implementation.

These objectives will be addressed to the degree possible as allowed by the data and time available. The topics of the appendices indicate the relative attention to the objectives and they are:

- A – High level indicators (these are the 11 performance measures defined by the Program)
- B – GRTS analysis (summary of fish habitat capacity sampling and resulting patterns)
- C – Analysis of channel rehab sites (physical and biological)
- D – Methodology used in developing the data frame
- E – Analysis of habitat and geomorphic relationships (to estimate fish habitat in un-sampled reaches)
- F – Riparian dynamics (focused largely on vegetation encroachment)
- G – Channel rehab site design evolution
- H – Decision Support System (a guide to integrating monitoring data and simulation modeling to facilitate AEAM)

To date, we have drafts of A, B, D, E, G, and H.

The projected milestones are:

- | | |
|-------------|---|
| November 12 | Draft report to SAB |
| November 26 | SAB returns comments to Anchor |
| December 7 | Draft report to TRRP Partners for comment |

We anticipate a phased approach for the report, with the first phase being an interim report that incorporates all that can be accomplished within the deadline and with an eye towards guiding the 2013 designs. A second phase will follow at a later date and will incorporate forthcoming products from the TRRP and possibly additional analyses.



TRINITY RIVER RESTORATION PROGRAM

P.O. Box 1300, 1313 South Main Street, Weaverville, California 96093
Telephone: 530-623-1800, Fax: 530-623-5944

October 5, 2012

To: Trinity Management Council (TMC)

From: Scientific Advisory Board (SAB)

Subject: SAB Comments on Peer Review of FY13 Preliminary Science Workplan

As described in the attached peer review report, the Trinity River Restoration Program (TRRP) retained the services of an independent, expert panel to conduct a review of its Fiscal Year 2013 (FY13) Preliminary Science Workplan (FY13 Workplan). This review was initially requested to be conducted by the SAB; however, we are currently engaged in a high-priority and time-sensitive comprehensive review of past channel rehabilitation actions ("SAB Phase I Review"). We felt that our role as an advisory board was better served by supporting an outside peer review of the FY13 Preliminary Science Workplan by recognized experts, followed by SAB overview of peer review comments and specific guidance for implementing the most relevant recommendations. We are pleased with the peer review recommendations and the panel's recognition of the more proper role of the SAB as an advisory group. We intend to give specific attention to the peer review comments where appropriate in the SAB Phase I Review. We have individually reviewed the panel's peer review report and overall we endorse their findings, with the caveat that in most cases we have not yet reviewed the individual activity proposals in great detail. Our individual comments follow (without attribution) and include more details on the areas in which we are in most agreement with the panel, along with areas in which we have additional, or slightly differing, comments. Areas where we differ from the panel, specifically relating to prioritization of FY13 Workplan activities, are described below:

- We maintain that revisions to Activity 13-3 (*Rehabilitation Site Effectiveness Monitoring & Analytical Framework*) be postponed until after the completion of the SAB Phase I Review so that they can be informed by the review's recommendations.
- We recommend reconsidering the priority of Activity 13-27 (*Integrated Flow and Sediment Modeling to Predict Planform Dynamics*) and postponing it in its present form. Because Activity 13-27 is essential for assessing channel response to management actions, it should be informed by recommendations forthcoming from the SAB Phase I Review.

We recommend that the TMC incorporate the panel's proposed adjustments to the prioritization of the FY13 Workplan, with our additional comments, as well as carefully consider the panel's broader comments regarding the Program as a whole.

SAB Member 1:

The panel has done an excellent job in a short amount of time, and I commend their efforts, both in terms of evaluating the FY13 Workplan and in providing insightful programmatic review. I endorse the panel's General Comments and Overall Conclusions, which are right on target and echo recommendations being prepared by the SAB as part of the Phase 1 Review.

I accept the panel's evaluation of the FY13 Workplan, with the caveat that I have not reviewed the individual activity proposals because of being tasked with the Phase 1 Review. This is a somewhat unusual situation, as the SAB would normally be actively engaged in the review process and would provide scientific advice to the program regarding the workplan and peer reviews.

Regarding Activity 13-3 (*Rehabilitation Site Effectiveness Monitoring & Analytical Framework*), I think the panel and the SAB are in agreement that this is an important topic that deserves immediate attention, but the current proposal is insufficient and needs revision before it can be recommended. It is unclear whether a revised proposal could go forward in FY13, and I think revisions would benefit from seeing the SAB's Phase 1 Review recommendations regarding the development of a decision support system for implementing an adaptive management framework. This was why our prior comments indicated that the proposal was premature. I also disagree with the panel regarding Activity 13-27 (*Integrated Flow and Sediment Modeling to Predict Planform Dynamics*). This topic is an essential element for assessing channel response to management actions, but I have not evaluated the strength of the proposal.

Finally, the panel might consider the following editorial revisions:

- pp. 5-6, Sections. 3.2.1-.4: This is more of a comment than an edit. Referencing the Integrated Assessment Plan (IAP) objectives at the start of these subsections is very useful, but past workplans had a tendency to invoke IAP objectives without clearly stating how the activity would specifically meet the objectives. I wonder if this was also the case in FY13 and, if so, the panel might consider commenting on this issue.

[Response from peer review panel: The key deficiencies that identified in Section 3.3.3 of the peer review report speak to the fact that the workplan does not make the link between the IAP objectives and the proposed work sufficiently. Specifically, hypothesis-based conceptual models are missing for all of the major subsystems--geomorphology, fish populations, and riparian processes--and a first priority is to develop or update these.]

SAB Member 2:

The peer review largely meets the purpose and follows the comprehensive scope as provided by the TRRP. The document synthesizes a considerable amount of information very well. The individual plans are typically quite long and vary in detail and clarity, so it is especially commendable that several plans were evaluated in a small amount of time. The overall structure and presentation of the peer review is excellent, and I endorse it. However, I have comments about it that could improve it or at least lend some context.

The TRRP has a complex organizational structure that mirrors the complex life history of its prime beneficiary – anadromous salmonids. In order for both to be successful, all the separate requirements must be yet integrated. The TRRP has had some difficulty in mensurative and adaptive management tasks (e.g., sampling, metrics, hypothesis formulation, management targets, modeling and analysis) as well as integrating and prioritizing them. The scope for the review leans more towards integration and prioritization and the peer review reflects this.

The peer review panel suggests that performing the core activities of an adaptive management program should be integrated in the TRRP. The review's section on this (Section 3.1) is very well written and instructive. Their reluctance to simply "add to the current list of reporting obligations" is especially astute.

The panel further addresses integration and individual aspects in Section 3.1. I disagree with the implication that efforts to quantify habitat are high given that the most compelling evidence to meet the fundamental question is adult run size and smolt out-migration. Imagine, someday, a 15 minute presentation in front of a harried Congress that could involve just two questions: "Have fish numbers increased", and "How come"?

Of course, the TRRP's mission is focused on improving the salmonid fishery, but a primary way chosen to do this is via habitat improvement. The main ways deemed to improve habitat are to build it directly, facilitate river processes via streamflow and gravel augmentation, and the anticipated synergy between these two approaches. Fish numbers may be the bottom line, but knowing what influences it is important from an adaptive management perspective as well as simply justifying resource expenditures.

The review mentions the development of a salmonid population model (e.g., SALMOD) and its importance and I concur, but I don't think it is "overarching" or has been over-shadowed by the various sub-objectives. Many products of the sub-objectives are needed for building such a model (and there are still data gaps), and the habitat-enhancement objectives, as well as others, requires activities that are extraneous to a salmon population model.

We were not expected to review the individual plans, so detailed comments on each plan could duplicate the efforts of the panel members. However, I briefly read the Activity 13-13 work plan "Map and quantify riparian vegetation" and initially planned on incorporating my specific comments about it here. Based on what I know about past efforts and the 2013 plan, the peer review panels comment about it largely match my own, and the differences are minor and best addressed elsewhere.

SAB Member 3:

I agree with the assessments of SAB Members 1 and 2 of the report and would like to add that Atkins and the review panel have done an admirable job. In addition to SAB Member 1's suggested edits, I think that it should be made clear on page 4 paragraph 2 (i.e., "This activity -- which is at the core of adaptive environmental assessment and management -- appears to be currently accomplished via outside reviews and the SAB.") that the synthesis is only being done by SAB through the Phase I review. My understanding is that this (the synthesis) is a unique, one-time task by the SAB and is not part of SAB's traditional role.

SAB Member 4:

I reiterate the feelings of other SAB members - the external review panel has done an impressive job of consuming and summarizing a large amount of information represented by the FY13 Workplan in a very short time. I appreciate the review panel's work and fully support their General Comments and Overall Conclusions. Similarly to SAB Member 1's comments, I accept the panel's evaluation and programmatic comments, but also must note that I have not reviewed all of the FY13 Workplan components covered by the panel's report.

Of most particular note in the external review panel's report is the programmatic thread that the panel weaves between individual activity evaluations. The panel notes that the current plan development and work proposal system is not sufficient to support the TRRP's adaptive management needs. The panel found that they could not identify the core components of a program-wide adaptive management framework, in particular, the analysis and interpretation of monitoring observations. This shortfall in the Program is seen to be so critical that the panel goes beyond their specific task of reviewing a single year's suite of proposed actions to suggest that the TRRP would be well served to consider broad reorganization, structuring the TRRP "around consistent, integrated synthesis and analysis that links cause and effect, action and response, assessment and management..." Programmatic reorganization would build specific analytical capacity within the TRRP rather than relying on the SAB and external reviewers. The panel notes that it is only through adopting a formal, complete adaptive management process that the management loop would actually be closed.

A key component of a programmatic adaptive management framework for the TRRP are predictive models - models of sediment dynamics and salmonid population dynamics that are incorporated into the Adaptive Environment Assessment and Management framework as identified in the IAP, models of riparian vegetation dynamics and models that link project feature performance with the design of future projects. The review panel identified a common weakness across the proposed work for FY13 and within the TRRP in general that there was the need for "basic strengthening of the analysis, interpretation, and adaptive management core of the program."

While it may seem overreaching and none too constructive for a FY13 workplan review to focus on programmatic issues, I see it as encouraging that structural weaknesses within the TRRP are clear to external reviewers. The reviewers find that many of the necessary pieces are in place, that much of the required data collection is proposed or underway, but to make the Program function as its mission holds, additional work that is fundamentally different from that proposed in the FY13 Workplan is required. That the external review panel could see beyond the set of proposed actions and place the work in the context of the overall program is the hallmark of a thorough and insightful review.

SAB Member 5:

The Peer Review is very well done and the process was conducted and documented in a timely and professional manner. Atkins and the expert panel members are to be congratulated on a job well done.

I agree with comments submitted by SAB members 1, 2 and 3. I agree with SAB Member 3 that the Phase I Review synthesis is a unique one-time task by the SAB. This task appears to have resulted from observations by TRRP partners and stakeholders that the Adaptive Management part of the Program was not being accomplished, and they requested that the SAB Phase I Review actions and make recommendations to the Program for going forward.

The recurring theme of the Peer Review is a lack of integration and identified linkages among monitoring, analyses, interpretation, and subsequent revised management actions. The Peer Review agreed with the Bradford and Hankin (2012, p.21) recommendation that integration and synthesis "be elevated to be a significant component of the adult assessment program." I agree and the SAB Review will place considerable emphasis and give specific recommendations on developing this integration process as part of an internal, centralized Decision Support System.

The review mentions development of anadromous salmonid population dynamics model to be incorporated in the Adaptive Environmental Assessment and Management framework. This is an important component of a much needed Decision Support System. Not only may this component (e.g., SALMOD II) be "overshadowed by numerous sub-objectives," but the integration of flow, sediment and physical construction actions is overshadowed as well by numerous sub-objectives.

The Peer Review section Sediment and Geomorphology, also recommends "development of a model...to focus and evaluate monitoring actions and, more importantly, to provide the analytical structure required to link management actions....but the linkage between these continuing observations and local channel response providing desired habitat must be more explicitly defined and tested." Both these linkages are necessary components of a much needed Decision Support System for the Program.

Collectively, the above integration efforts are expected to greatly increase understanding of the river morphology within the geomorphic context, e.g. process domains, and how the system may be expected to evolve, producing improved habitats and increased freshwater anadromous fish production.

For these reasons both activities 13-3 and 13-27 should be postponed until better developed and informed by the SAB Review.

The Peer Review is right on in recognizing that an integration effort is clearly needed, and should be considered a core activity, rather than conducted by outside reviewers, contractors, and advisors. This appears to have been the intent of the original TRRP organization design, namely the Adaptive Environmental Assessment and Management Team (Appendix C Implementation Plan for the Preferred Alternative of the Trinity River EIS/EIR). With such a core activity in place, the SAB would perform the more advisory role of reviewing the Program's approach to incorporating science (peer reviews and program responses) in assessing system response, adjusting monitoring activities to evaluate predictions, inform models and suggest modifications to future management actions along with adjusted monitoring to test those actions. In this role the SAB would provide periodic

advice on how well the science supports the Adaptive Management aspects of the Program and offer recommendations for improvement.

While the request for proposal process was not fully developed and proposals were poorly documented, in some cases, it has provided an important template for future workplan reviews. The Program should improve the process by requiring proposals to include better documentation, focus on specific IAP objectives, and identify linkages to other workplan activities, using the Peer Review Panel comments as guidance to build a science supported management program. In addition, I recommend that this process of outside peer review, followed by SAB oversight, be continued in the future.

The insights provided by the reviewers provide a firm basis for much of the discussion by SAB to date, and reinforce recommendations forthcoming from the SAB Phase I Review.

**Peer Review Report
Trinity River Restoration Program
Preliminary Fiscal Year 2013 Science Workplan**

October 2012

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1.0 INTRODUCTION

1.1 Peer Review Participants

Panel Members

Don Orth, Ph.D.
John Stella, Ph.D.
Peter Wilcock, Ph.D.

Atkins Facilitators

Tom St. Clair, Ph.D.
Rebecca Burns

1.2 Purpose of Peer Review

The Trinity River Restoration Program (TRRP or Program) requested an independent expert review and evaluation of its Fiscal Year 2013 (FY13) Preliminary Science Workplan, a prioritized list of science and monitoring activities developed by the TRRP technical workgroups. The desired outcome of the review was a unified science workplan that would meet the Program's adaptive management needs. The Program's Scientific Advisory Board (SAB) will review the review panel's recommendations and advise the Trinity Management Council (TMC) about prioritization of FY13 activities.

1.3 Scope of Peer Review

The review panel, composed of a geomorphologist, fisheries biologist and riparian ecologist, was instructed to review and evaluate the FY13 Preliminary Science Workplan and recommend revisions to the prioritization of the proposed activities. The review panel was asked to consider whether the suite of proposed activities address the TRRP programmatic goals and whether the prioritized activities would improve the Program's ability to adaptively manage its available management actions (goals and management actions are specified in the Record of Decision (ROD) [USDOI 2000]). The TRRP provided the panel with the following list of questions to consider in their review:

- Are there linkages between proposed projects (activities) that are being missed? Please identify and make recommendations on how to achieve those linkages.
- Are there duplications between projects (activities) that should be eliminated?
- Are there deficiencies in the overall program of work to achieve program objectives?
- Are there projects (activities), or subordinate tasks, that should be elevated or lowered in priority?
- Are there projects (activities), or subordinate tasks, that should be expanded or reduced in scope?
- What are the primary projects (activities) or tasks that are necessary to address the program objectives and what would be considered secondary component tasks or projects in achieving these objectives (either between projects or within projects)?

- Identify any inefficiency in projects (activities) or tasks when considered in context of a unified work plan and how they might be remedied.

The desired outcome of the review process was a peer review report that includes any recommended revisions to the prioritization of the activities, rationale for those revisions and overall comments and conclusions.

The panel was provided with the FY13 Preliminary Science Workplan, a spreadsheet of 37 proposed science and monitoring activities arranged in priority order, along with extensive supporting information and background materials. Supporting information included proposal briefs, investigation plans and external review documentation for each proposed activity (when available). Background materials included the ROD (USDOI 2000), Trinity River Flow Evaluation Report (USFWS and Hoopa Valley Tribe 1999), Integrated Assessment Plan (IAP) (TRRP and ESSA Technologies Ltd. 2009) and a draft summary of “Big Questions” among others. Additionally, the panel was provided with recent evaluations of adult salmonid monitoring (Bradford and Hankin 2012) and habitat carrying capacity (Beechie et al. 2012), as well as a 2009 integrated habitat assessment (IHA) (Hoopa Valley Tribe et al. *in prep*) and a draft of portions of an integrated habitat assessment for water year (WY) 2011 (Hoopa Valley Tribe and McBain and Trush *in prep*). Other reports and evaluations were provided; however, those listed were relied upon most heavily by the panel during their review.

2.0 PEER REVIEW PROCESS

Atkins, North America, hereafter referred to as Atkins, was retained by the TRRP to select peer review panel members and facilitate the peer review process. The terms of the contract are set in the contractual document and include the following:

- Prepare panelist invitation letter and instructions for review by TRRP;
- Secure the panel;
- Distribute materials to panelists and coordinate the start of the review;
- Facilitate a web-based orientation meeting;
- Manage panelist queries during one-week review period;
- Facilitate production of panel report; and
- Incorporate SAB input.

2.1 Selection of Reviewers

Atkins was directed to select three reviewers with expertise in geomorphology, fisheries biology and riparian ecology. Collectively the panel was required to have expertise in physical processes of mountain rivers, riverine ecology, fish population/habitat interactions, riverine rehabilitation techniques, and adaptive management (with emphasis on adaptive management in association with restoration programs). All panel members were required to have a Ph.D. in their respective fields. Members of the peer review panel were to be selected in accordance with the general principles of the National Academy of Sciences Policy on Committee Composition and Balance and Conflict of Interest for Committees. To avoid real or perceived conflicts of interest, the TRRP specified that employees of TRRP partners (Bureau of Reclamation, U.S. Fish and

Wildlife Service, Hoopa Valley Tribe, Yurok Tribe, Trinity County, the California Resources Agency [consisting of California's Department of Water Resources and the Department of Fish and Game], the U.S. Forest Service and National Oceanic and Atmospheric Administration [NOAA] Fisheries) could not participate in this review.

Due to the tight timeframe for this peer review (in order to influence programmatic decision making for FY13), Atkins began by contacting members of the SAB for panel member recommendations. Emails were sent to prospective candidates with an invitation letter that detailed the purpose of the review, duties of the panel, review process and schedule. Atkins confirmed the following individuals for the panel (see Appendix A for CVs):

- Fisheries Biology: Dr. Don Orth, Virginia Tech University
- Riparian Ecology: Dr. John Stella, State University of New York College of Environmental Science and Forestry
- Geomorphology: Dr. Peter Wilcock, Johns Hopkins University

2.2 Document Review and Report Development

Upon selection, reviewers were provided with the workplan and all supporting information in both hard and electronic forms. Background information was provided as links and electronic files. Atkins held two teleconferences (August 31 and September 7, 2012) with the panel and TRRP management staff to describe the purpose and desired outcomes of the review and answer any clarifying questions from the panel. The reviewers conducted their independent desk reviews between September 10 and 14, 2012. On September 17, 2012, Atkins convened a webinar and teleconference with the panel to discuss and document their individual and collective review comments and begin preparation of this summary report. Panel members prepared the General Comments and Overall Conclusions and Discipline-specific Comments, while Atkins prepared the Introduction, Peer Review Process and Response to Review Questions (summarized from the teleconference). The compiled draft report was distributed to the panel for review and revisions were incorporated. Another teleconference was held on September 20, 2012 to review comments on the draft report prior to submittal to the SAB for review.

The report was submitted to the SAB for review on September 21, 2012 and all comments were received from the SAB by October 1, 2012. SAB members submitted their comments individually to Atkins, who then summarized them in a memorandum and attached the individual comments (without attribution). The memorandum was distributed to the SAB for review and approval. Simultaneously, TRRP staff reviewed the draft report for accuracy and provided clarifying comments and corrections. All comments received from the SAB and TRRP were distributed to the panel for consideration and revisions were made to the report to correct inaccuracies and clarify recommendations.

3.0 RESULTS

3.1 General Comments and Overall Conclusions

The panel's review of the workplan was made difficult by unevenness in the quality and detail of the individual proposals. Many did not contain sufficient information to understand the scope and location of the work. Although the task of the panel was not to provide a specific review of each individual proposal, the lack of information made it difficult to make the linkages needed to evaluate how the proposed monitoring and research activities contribute to the Program's adaptive management needs. The panel recognizes that the proposal solicitation process is new and that the Program is in the process of making the workplan development process more accountable, transparent, and integrated; however, the current proposal system is not yet sufficient. Future reviews would be aided by providing a single overview of the proposed research plan that integrates monitoring results to date and applies these results to two questions:

- a) Are monitoring activities demonstrating that management actions are working (achieving Program objectives)?
- b) What changes in management actions are being considered?

A synthesis demonstrating how the proposed workplan is developed in response to existing monitoring and these basic adaptive management questions would allow for a better focused review.

More fundamentally, the panel found that it was unable to identify sufficient effort directed to core activities of an effective adaptive management program: the analysis and interpretation of monitoring observations applied to Program questions and hypotheses in a way that can lead to revision of management actions. A consistent theme that emerged in the discipline-specific comments below (Section 3.2) is that the linkage among monitoring, analysis, interpretation, and revised management is not apparent. With some exceptions, it *appears* that there is sufficient information being collected to achieve this task and that many of the monitoring programs are appropriately focused. There is not sufficient indication that this information has been, or will be used to improve management decisions. In this sense, the panel strongly agrees with the recommendation of Bradford and Hankin (2012, p. 21) that "program integration or synthesis be elevated to be a significant component of the adult assessment program". The panel suggests taking this recommendation further by expanding its scope to all program objectives and by emphasizing that more effort is needed to focus the synthesis on testing program hypotheses, answering questions, and *using this information to revise program actions in a truly adaptive framework*.

In making these observations about apparent weaknesses in synthesis, interpretation, and feedback to management, the panel is reluctant to recommend specific actions that might simply add to the current list of reporting obligations of TRRP partners and contractors. For example, requirements to add an integration component to individual activities, or to implement additional synthesis workshops, are not, on their own, likely to provide the actual synthesis, learning, and reframing of management actions that are needed to conduct effective adaptive management. A broader reprioritization should be considered such that the Program is structured around consistent, integrated synthesis and analysis that links cause and effect, action and response, within a broader system context. This activity -- which is at the core of adaptive environmental assessment and management -- appears to be currently accomplished via outside reviews (e.g.,

peer reviews of individual monitoring activities) and the SAB. It is important to ask whether this is the most effective approach.

The panel suggests that the task of *performing* the synthesis and feedback should be built into TRRP in a more integral way. Specifically, the panel suggests that this integration be conducted by permanent program staff, in collaboration with program stakeholders and contractors, rather than by individuals employed as outside reviewers, contractors, and advisors who are temporarily associated with the program. This essential task should be performed in a way that promotes continuity, context, and focus. Intellectual direction by a designated senior scientist should be considered as a means to develop and maintain a robust connection between monitoring and management. Outside reviews should *review* the synthesis and management choices. The SAB should *advise* on the work that is performed. If the core work is performed by temporary program participants (e.g., contractors, reviewers, or advisors), it is harder to envision how a coherent, focused, forward-stepping framework could be built. Rather, it is likely that the program could become overwhelmed by ever-accreting lists of priorities, unsynthesized observations, and excessive focus on the management process, without developing a focused, management experiment able to revise actions in response to monitoring observations.

The SAB is currently engaged in an exceptional, one-time integrated review of TRRP Phase I. This review is clearly needed at this point and the Program is fortunate that that SAB has undertaken this important activity. In the future, the Program would benefit from this type of assessment being performed on a rolling basis, by permanent staff, such that linkages between management hypotheses, project performance, and adaptive response are more actively maintained.

3.2 Discipline-specific Comments

3.2.1 Sediment and Geomorphology

The components of the annual work plan support the objectives of the IAP, in particular:

- Objective 1: Create and maintain spatially complex channel morphology

The Trinity River restoration actions, as defined by the ROD, include changes in flow, additions of gravel, and local channel and bank rehabilitation actions. Once the proposed slate of local rehabilitation actions are complete, a key hypothesis to consider is whether dam releases and ongoing gravel injections would maintain the system in a desirable state. This implies that sufficient gravel would move through the system to maintain desired habitat features, with an emphasis on dynamic topographic and hydraulic diversity. Of particular importance is an understanding of the distance, continuity, and style of gravel transport downstream of injection points. Can a continuous gravel system be developed or is the system segmented by locations that would continue to store sediment for decades? Would existing pools persist or new pools develop as a new dynamic transport system develops? The existing conceptual model supporting coarse sediment management (McBain and Trush 2003) is sufficient to initiate the adaptive management process, but a long-term operational plan must be built on more specific, testable estimates of how gravel moves through the system. The FY13 Workplan contains proposed activities (e.g. 13-12, *Gravel Implementation Monitoring*; 13-17, *Geomorphic monitoring and*

assessment of bed scour and mobility; 13-18, Geomorphic response to high flow duration; 13-26, Gravel implementation tracer experiment) that provide field observations and parts of the analysis needed to build a revised conceptual model. Development of such a model should have higher priority, because it is needed to focus and evaluate monitoring actions and, more importantly, to provide the analytical structure required to link management actions (gravel augmentation, dam releases) to the desired geomorphic behavior of the river channel. On-going monitoring of sediment transport rates at the four mainstem stations (13-16, *Sediment monitoring*) provides the essential time series needed to track integrated river channel response to management actions, but the linkage between these continuing observations and local channel response providing desired habitat must be more explicitly defined and tested.

3.2.2 Salmonid Recovery

The components of the annual workplan support the objectives of the IAP, in particular:

- Objective 2: Increase/improve habitats for freshwater life stages of anadromous fish to the extent necessary to meet or exceed production goals
- Objective 3: Restore and maintain natural production of anadromous fish populations, and
- Objective 4: Restore and sustain natural production of anadromous fish populations downstream of Lewiston Dam to pre-dam levels, to facilitate dependent tribal, commercial, and sport fisheries' full participation in the benefits of restoration via enhanced harvest opportunities.

The workplan includes activities that will address a number of key hypotheses critical to the success of the TRRP. In particular, the fundamental question addressed seems to be: Will the channel rehabilitation, gravel augmentation, and variable flow releases increase natural production of juvenile salmonids and outmigrant smolts? While substantial resources are devoted to the analysis of the quantification of habitats created via rehabilitation (Activity 13-4), the most compelling evidence should arise from the measures of size of the naturally produced runs (Activity 13-5) and resultant outmigrant smolts (Activity 13-6). It is essential that protocols be developed and tested to accurately measure the natural production of anadromous salmonids. Sufficient data exist from the long history of monitoring the harvest and escapement, that a model of anadromous salmonid population dynamics could be developed and incorporated in the Adaptive Environment Assessment and Management framework (p. 15 IAP; TRRP and ESSA Technologies Ltd. 2009). This overarching goal appears to have been overshadowed by the numerous sub-objectives.

3.2.3 Riparian Ecosystem Dynamics and Wildlife Habitat

The riparian and wildlife components of the FY13 Workplan support objectives of the IAP, particularly:

- Objective 5: Establish and maintain riparian vegetation that supports fish and wildlife, and
- Objective 6: Rehabilitate and protect wildlife habitats.

The specific workplan activities that support these objectives include 13-13, *Map and quantify riparian vegetation*, 13-14, *Riparian and riverine bird monitoring*, 13-20, *Monitor abundance and distribution of Foothill Yellow-Legged Frog (FYLF) egg masses*, 13-22, *Monitor distribution and abundance of Western Pond Turtle (WPT)*, and 13-29, *Model how WY13 streamflow actions will affect riparian hardwood regeneration*. In light of the primary objective of the ROD and TRRP to enhance fish populations, it appears appropriate that all of these activities are of lower priority than those with direct linkages to fish populations and limiting habitat. The one exception is Activity 13-13, which is necessary for understanding (1) the linkages between fine sediment dynamics, vegetation encroachment, and riparian berm accretion, and (2) regeneration of riparian hardwood species large enough to eventually provide large woody debris (LWD) to the aquatic system (e.g., black cottonwood, white alder) and in appropriate channel and bank locations to prevent channel encroachment and geomorphic simplification. The remaining activities, which primarily concern wildlife monitoring, were generally not well-articulated in the supporting documents, and should be of lower priority. The Foothill Yellow-Legged Frog and Western Pond Turtle activities (13-20 and 13-22) were lacking proposals and budget line items, so it is unclear whether these tasks are intended for inclusion in the FY13 Workplan.

Echoing the general comments of this review, the extensive riparian vegetation monitoring conducted to date (Hoopa Valley Tribe et al. *in prep*; Hoopa Valley Tribe and McBain and Trush *in prep*) provides excellent data to document site-level conditions and dynamics at restoration and reference sites. As a whole, though, it is unclear whether these findings are answering the critical questions, which are well-summarized in Figure 1.1 (p. 16) of the 2009 IHA draft report (Hoopa Valley Tribe et al. *in prep*; e.g., “Is riparian encroachment occurring, and if so, how can it be remedied?”). For example, there should be more synthesis of the comprehensive riparian and geomorphic results presented in both the 2009 and 2011 reports to assess whether the dominant pattern of vegetation/sediment feedbacks in the system under a restoration flow and site rehabilitation regime are maintaining an appropriate channel geometry at most locations or, alternatively, are re-establishing riparian berms at many/most of the restoration sites. The dominant pattern is not clear from the reports, which could benefit from more targeted executive summaries. As for priorities going forward, the panel suggests that the critical riparian/geomorphic questions articulated in Figure 1.1 be assessed over multiple scales (i.e., patch, site, reach) and be used to link, via a conceptual model, the empirical results to future management actions.

In the case of geomorphic/vegetation feedbacks, there is an overwhelming amount of high-quality data collected as part of the IHA, but the interaction between fine sediment deposition and plant establishment patterns appears insufficiently explored. For example, the 2011 draft monitoring report (Hoopa Valley Tribe and McBain and Trush *in prep*) describes the accretion of fine sediment on banks at some sites and highlights concern whether re-initiation of berms is occurring. At the same time, WY2011 flow releases, representing a ‘wet’ year regime, were successful at removing approximately 80 percent of seedlings less than one centimeter in diameter. However, it is unclear whether the surviving seedlings were associated with the fine sediment deposits, or whether an 80 percent mortality rate is sufficient to reduce densities below the threshold for sediment deposition feedbacks to occur. The assessment of encroachment risk using extant seedling densities may be underestimated, as measured densities in field surveys may have changed (increased or decreased) since the initiation of feedbacks. It appears that

these questions need to be addressed at several scales that include quantifying vegetation patch coverage and dynamics for a reach combined with finer-scale demography of individual patches.

Going forward, perhaps the level of field measurement presented in the IHA monitoring could be relaxed a bit, with less emphasis on species or association-level divisions, and more effort placed on analyzing larger-scale patterns. The band transect data collection, for example, is very detailed as to species and plant size (diameter and height of individuals). For understanding encroachment patterns at the site and reach scale, it may be possible to group species by functional groups (e.g., herbaceous, scrub/shrub, small tree, large tree) and general patch density estimates (e.g., log scale) and size classes. Trying to assign age classes to the seedlings is important only if it is desirable to determine when they recruited relative to a given flow event or year, but it is not necessary for estimating scour vulnerability because seedling sizes and densities can vary greatly within a cohort. It would be more beneficial to know the spatial extent of recruitment throughout a reach (with sampling distributed more broadly across a target bank morphology, or several morphological units), than to know the specific demography of relatively few patches.

The second riparian vegetation process that is directly relevant to fish populations is the potential for LWD recruitment within the channel. For this, the riparian assessment provides good information regarding the distribution of hardwood seedling recruits and their placement within the channel environment. As with the riparian berm question, the panel recommends additional synthesis of data results and macro-scale patterns. Will the current observed rate of establishment of species with large diameter adult forms have the potential to increase the supply of LWD usable by fish to the system, and by how much and with what level of uncertainty? A patch approach that quantifies approximate densities and geomorphic locations may allow for additional resources to be freed up to conduct assessments at more locations.

3.2.4 Activity 13-3 Rehabilitation Site Effectiveness Monitoring and Analytical Framework

Although the panel does not provide specific review comments on each proposal, the focus of this particular activity merits comment inasmuch as it reinforces some of the panel's broader concerns about the Program. The activity proposes a synthesis of ongoing monitoring in support of "developing a new approach to the assessment of rehabilitation site features compared with their design objectives." The proposed approach or framework is intended to tighten the link between the performance of existing projects and the design of future projects. Clearly this activity is at the heart of the Trinity River adaptive management program. The panel is concerned that the proposed work arises from the implementation branch of TRRP, that it apparently competes for funding with other proposed monitoring activities, and that it is at least partly outsourced to contractors. The panel agrees with the SAB review of this activity in its finding that the proposal is insufficient in its explanation (as was the case with many of the proposals). The panel also clearly agrees with the SAB that the work is essential. The panel does not agree with the SAB conclusion that the proposed work is premature and should wait for completion of the SAB Phase I review. The panel suggests that the work be further defined and immediately implemented as a core function of TRRP implementation and science staff. That such an essential aspect of the adaptive management process appears as a vaguely worded

proposal with support for external consultants appears to be emblematic of the need for a basic strengthening of the analysis, interpretation, and adaptive management core of the program.

3.3 Response to Review Questions

Below are the panel's comments in response to specific questions that were not included in the General Comments (3.1) and Discipline-specific Comments (3.2) sections. **Table 1** summarizes panel comments by activity.

3.3.1 *Are there linkages between proposed projects (activities) that are being missed? Please identify and make recommendations on how to achieve those linkages.*

It is not clear how activities 13-5a (*Spring and fall Chinook and coho salmon and fall-run steelhead run-size estimation using mark recapture methods*), 13-6a (*Juvenile salmonid outmigrant monitoring program*) and 13-15 (*Juvenile Salmonid Density Monitoring*) will work together to address whether program goals are being met and whether natural production of salmonids is being estimated. These activities should be coordinated and integrated. If these annual reports were prepared together, important questions could be addressed such as the precision of estimates of young produced per adult and whether there are spatial effects depending on where the channel has been rehabilitated. Without coordination and integration, these questions cannot be addressed.

It appears that activity 13-3 (*Rehabilitation Site Effectiveness Monitoring and Analytical Framework*) is an effort to coordinate a number of other evaluation efforts (i.e., 13-12, *Gravel Implementation Monitoring*; 13-18, *Geomorphic response to high flow duration*; 13-23, *Assess design performance of specific design features*; 13-28; *Map and quantify extent of available adult holding habitat at rehab sites and throughout the mainstem*). There is not sufficient detail to evaluate the coordination among these activities (see also Section 3.2.4).

Activity 13-4 (*Assessing effects of restoration on Chinook Salmon and Coho Salmon rearing and spawning habitat*) is inadequate in terms of detail on methods, number of rehabilitation sites and experimental design, and needs to be integrated with geomorphic, riparian, juvenile density and wildlife studies. It is a major flaw to not integrate gravel monitoring (i.e., 13-12, 13-26) with 13-4. Also, rehabilitation sites need to be reviewed with respect to salmonid rearing habitat (i.e., integration of activities 13-3 and 13-4).

Activity 13-12 should be integrated with activities 13-17 (*Geomorphic monitoring and assessment of bed scour and mobility*) and 13-18 (*Geomorphic response to high flow duration*).

Activity 13-13 (*Map and Quantify Riparian Vegetation*) should be integrated with the various geomorphic analyses to assess the likelihood that riparian berms are re-establishing, both at individual restoration sites, and system-wide.

The analysis portion of activity 13-29 (*Model how WY13 streamflow actions will affect riparian hardwood regeneration*) should be integrated within activity 13-13 (*Map and Quantify Riparian Vegetation*).

3.3.2 *Are there duplications between projects (activities) that should be eliminated?*

Activities 13-12 (*Gravel Implementation Monitoring*) and 13-25 (*Retrospective evaluation of topographic changes at Rush Creek delta*) overlap in the sense that both include gravel monitoring in Rush Creek pool.

3.3.3 *Are there deficiencies in the overall program of work to achieve program objectives?*

Deficiencies are described in the General Comments and Overall Conclusions section and in responses to the other questions. Of most importance to effective adaptive management is a more complete, explicit, and active link among hypotheses, monitoring, synthesis, interpretation, and revision of management plans. This linkage should be supported by three high priority activities: (1) update the conceptual model for coarse sediment management (see Section 3.2.1), (2) develop a model of anadromous salmonid population dynamics (see Section 3.2.2) and (3) assess the critical riparian/geomorphic questions articulated in Figure 1.1 of Hoopa Valley Tribe et al. (*in prep*) over multiple scales and develop a conceptual model to link results to future management actions (Section 3.2.3). These models provide the framework for testing management hypotheses. Performance relative to these hypotheses forms the basis for revised management actions, including planning at the annual level.

3.3.4 *Are there projects (activities), or subordinate tasks, that should be elevated or lowered in priority?*

The panel found it difficult to address this question without knowing the results of monitoring conducted to date. In general, target dates for sharing assessment information should be elevated in priority to inform operational decisions. With that in mind, the following are some observations and recommendations to address this question.

Activity 13-6b (*Myxosporean parasites effects and energy reserves of juvenile Trinity R. Chinook*) should be lowered in priority as this is not currently an issue; however, the TRRP should be ready to increase the level of parasitic surveillance if needed.

Activity 13-13 (*Map and Quantify Riparian Vegetation*) should be elevated in importance as per comments in Section 3.2.3 in order to address IAP objectives 5 and 6.

Activity 13-14 (*Riparian and Riverine Bird Monitoring*) should be lower in priority because it does not directly relate to fish populations and habitat (Objectives 1-5 of IHA), and proposal reviews indicated that data analysis methods were unclear.

Activity 13-15 (*Juvenile Salmonid Density Monitoring*) should have the same priority as the other salmonid monitoring activities (13-4 through 13-6). These activities, together, address program objectives and 13-15 also provides a direct connection with channel design activities.

No details were included for Activity 13-16 (*Sediment Monitoring*); however, it provides the essential time series needed to track river channel response to management actions and is thus a

3.3.5 *Are there projects (activities), or subordinate tasks, that should be expanded or reduced in scope?*

The panel felt several individual monitoring activities and components could be expanded or reduced in scope (see responses to questions above and *Table 1* for details).

3.3.6 *What are the primary projects (activities) or tasks that are necessary to address the program objectives and what would be considered secondary component tasks or projects in achieving these objectives (either between projects or within projects)?*

This question is addressed in Section 3.1 above.

3.3.7 *Identify any inefficiency in projects (activities) or tasks when considered in context of a unified work plan and how they might be remedied.*

This question is addressed in Section 3.1 and in responses to the questions above.

TABLE 1: SUMMARY OF REVIEW PANEL COMMENTS ON MONITORING ACTIVITIES

Item no.	Description	Panel Comments
13-1	Streamgaging	Provides consistent monitoring data over time which is essential; however, no details on methodology were included.
13-2	Water Year Specific	Funding is appropriate to enable response to unexpected events.
13-3	Rehabilitation Site Effectiveness Monitoring and Analytical Framework	Essential activity that should be performed in FY13; however, the proposal needs to be enhanced with scientific rigor and the role of internal (TRRP) staff needs to be expanded. Also, clarification is needed on how this will be coordinated with 13-12, 13-18, 13-23 and 13-28. See Section 3.2.4.
13-4	Assessing effects of restoration on Chinook Salmon and Coho Salmon rearing and spawning habitat	Inadequate detail on methods, number of rehabilitation sites and experimental design (i.e., comparing and contrasting pre- and post-rehabilitation); this monitoring activity should be integrated with 13-3, 13-12 and 13-26.
13-5a	Spring and fall Chinook and coho salmon and fall-run steelhead run-size estimation using markrecapture methods	Should be coordinated and integrated with 13-6a and 13-15.
13-5b	Trinity River Hatchery Chinook Coded Wire Tagging	Essential element of a comprehensive fish monitoring program.
13-5c	Coded Wire Tags	Essential element of a comprehensive fish monitoring program.
13-6a	Trinity River juvenile salmonid outmigrant monitoring program	Should be coordinated and integrated with 13-5a and 13-15.
13-6b	Myxosporean parasites effects and energy reserves of juvenile Trinity R. Chinook	The TRRP should be ready to increase the level of parasite surveillance if needed, but this activity should be lower in priority as it is not currently an issue.
13-7	Annual Operations Process	Insufficient detail provided to evaluate the utility of this activity.
13-8	Temperature Model Support	Insufficient detail provided to evaluate the utility of this activity.
13-9	Address PITA 2	No information provided to evaluate the utility of this activity.
13-10	Mainstem Chinook salmon spawning survey	Essential element of a comprehensive fish monitoring program.
13-11A	Yurok Tribal Fisheries Monitoring (fall Chinook)	Essential element of a comprehensive fish monitoring program.

13-11B	Hoopa Tribal harvest survey of Trinity River fall Chinook	Essential element of a comprehensive fish monitoring program.
13-11C	Lower Trinity River Sport Harvest Survey	Essential element of a comprehensive fish monitoring program.
13-11D	Lower Klamath River Creel Census	Essential element of a comprehensive fish monitoring program.
13-12	Gravel Implementation Monitoring	Should be integrated with 13-17 and 13-18 within a revised hypothesis for coarse sediment management that can be used for more directed guidance on more appropriate gravel monitoring activities. Also overlaps with 13-25 in terms of monitoring in Rush Creek pool.
13-13	Map and Quantify Riparian Vegetation	Should be elevated in priority and 13-29 should be integrated within it. More synthesis is needed combined with riparian and geomorphic monitoring from previous years to test hypotheses regarding berm formation and future LWD supply to the in-stream ecosystem. See Section 3.2.3.
13-14	Riparian and Riverine Bird Monitoring	Should be lower in priority because it does not directly relate to fish populations and habitat (Objectives 1-5 of IHA), and proposal reviews indicated that data analysis methods were unclear.
13-15	Juvenile Salmonid Density Monitoring	Should be elevated and grouped with activities 13-4 through 13-6.
13-16	Sediment Monitoring	Provides essential time series needed to track integrated river channel response to management actions and should be elevated in priority. The linkage between these continuing observations and local channel response providing desired habitat must be more explicitly defined and tested.
13-17	Geomorphic monitoring and assessment of bed scour and mobility	This activity should be integrated with 13-12.
13-18	Geomorphic response to high flow duration	This activity should be integrated with 13-12.
13-19A	Develop cohort reconstructions for fall Chinook to evaluate cohort performance or year class strength, and population growth rate.	Essential element of a comprehensive fish monitoring program.
13-19B	Klamath-Trinity River fall/spring run Chinook scale age analysis	Essential element of a comprehensive fish monitoring program.

13-20	Monitor the abundance and distribution of FYLF egg masses throughout the forty mile system	No proposal accompanied this activity thus it is unclear if this task is intended to be part of FY13 Workplan.
13-21A	Yurok Tribal Fisheries Monitoring (spring Chinook)	Essential element of a comprehensive fish monitoring program.
13-21B	Hoopa Tribal harvest survey of Trinity River spring Chinook	Essential element of a comprehensive fish monitoring program.
13-22	Monitor the distribution and abundance of WPT	No proposal accompanied this activity thus it is unclear if this task is intended to be part of FY13 Workplan.
13-23	Assess design performance of specific design features (alcoves, side channels, lowered floodplains, etc)	This activity seems essential to a comprehensive monitoring program but it is difficult to determine if it should be elevated without additional details. It should be coordinated with 13-3. (May be better suited for design team to address.)
13-24	Riparian PITAs 3, 4, 5	No proposal accompanied this monitoring activity; thus it is unclear if the task is intended to be part of FY13 Workplan.
13-25	Retrospective evaluation of topographic changes at Rush Creek delta	Overlaps with 13-12 in terms of monitoring within Rush Creek pool. This is an appropriate ranking for this monitoring activity.
13-26	Gravel implementation tracer experiment	Good concept for a monitoring activity, but more detail is needed on the likelihood of success. Could be included as part of the actual implementation effort.
13-27	Integrated flow and sediment modeling to predict planform dynamics	This newly conceived activity is not as critical as others. Other sediment/geomorphology monitoring and modeling activities more directly contribute to testing of management hypotheses.
13-28	Map and quantify the extent (area) of available adult holding habitat at rehab sites and throughout the mainstem	Should be coordinated with 13-3.
13-29	Model how WY13 streamflow actions will affect riparian hardwood regeneration	Not as critical an activity as 13-13, but should be integrated within the scope of that activity.

Note: Shaded activities indicate a proposed change in the priority or an activity that should be coordinated and/or integrated with others.

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APPENDIX A: REVIEWER CURRICULA VITAE

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ADD CVs