NC - 150

Trinity River Restoration Program

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

November 15, 2012

NC-100
WTR-4.03

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

Subject: Response to Your Letter of October 22, 2012

Dear Chairman Hadley:

Thank you for your October 22, 2012, letter summarizing the most recent meeting of the Trinity Adaptive Management Working Group (TAMWG). I will address most of your comments and recommendations below in the order they were presented.

Joint Meeting

We appreciate your positive comments regarding the joint Trinity Management Council (TMC) and TAMWG meeting. We, too, regarded it as a very worthwhile effort and support conducting regular joint meetings.

TMC Chair Presentation

The TAMWG requested an explanation of the TMC's response to prior TAMWG recommendations during the TMC Chair update segment of the succeeding TAMWG meeting. I will do my best to ensure that either I or my designee provides that information during the meetings.

Federal Advisory Committee Act (FACA) Presentation

Some TMC members attended the presentation by the Office of the Solicitor outlining the key requirements of establishing and fulfilling a FACA-charted committee. They also regarded the presentation as informative and helpful.

Trinity River Restoration Program (Program) Update

The TMC agrees that despite the significant challenges faced by the Program, we noted that solid progress was made during fiscal year (FY) 2012. We appreciate your recognition of Executive Director Robin Schrock's diligence in leading the Program and fulfilling TAMWG requests and TMC directives.

FY 2013 Budget

Recommendation 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 2013.

Reply: As mentioned during the TAMWG meeting, the Lorenz Gulch restoration site would be reduced in scope in response to overall budget concerns. Should additional funding be sufficient, the Douglas City site will also be possible; restoring that project funding would be first priority. However, if a sufficient level of funding is not available for that project and some lesser amount is available, the funding of additional watershed work would be considered. We are awaiting additional prioritization of watershed projects from the Watershed Work Group and that information would be reviewed in making that determination.

Recommendation 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.

Reply: The Lower Trinity River Sport Harvest Survey was proposed for funding in FY 2013 (for implementation in the fall of 2013) in the recently proposed budget. The Hoopa Valley Tribe later provided their perspective as to the tribal ordinance governing river access on tribally held lands. They indicated that some level of sport harvest continues on that reach of the river and thus the Lower Trinity River Sport Harvest Survey did take place this fall (funded in FY 2012). Because it is unnecessary to allocate funds for this project for 2013 until late in the FY, the associated budget line item will be revaluated after the Hoopa Valley Tribe reconsiders the ordinance, which is slated to occur in the early part of calendar year 2013.

Recommendation 3: The TAMWG recommends the TMC approve the priorities as presented in the FY 2013 Budget, with the caveat of the previous two recommendations, above *(please note the minority opinion corresponding to this recommendation).*

Response: We are grateful for the recommendation to approve the proposed budget and have reviewed the minority opinion. Concerning the issue of suspending restoration activities until the Phase I report is completed, it should be noted that there will be sufficient time to incorporate recommendations from the Phase I review prior to implementation of restoration activities in FY 2013 and further, the Science Advisory

Board will be specifically reviewing the proposed projects during their design in light of the Phase I review.

The TMC appreciates the input on the draft Trinity River Restoration Program FY 2013 budget and the TAMWG's acknowledgement that some of the funding levels will later vary due to the continuing resolution, which extends through March 27, 2013.

Inflow Forecasting and Water Year Type Determination

During its October 23 and 24 meetings, the TMC reviewed the TAMWG recommendations and appreciates the thoughtful input. We reviewed the letter from the California Department of Water Resources and its recommendations concerning the process for water year determination in the Trinity River Basin. The TMC, as a body, has limited ability to affect any change, given the diverse agency involvement, and after reviewing the water year determination information we observe that current data collection and analysis has been very accurate. Thus, we have asked individual TMC members to consider this input in determining how their respective agency could assist directly in the implementation of the recommendations.

Again, thank you for your letter and for this opportunity to respond.

Sincerely,

Brian Person, Chair
Trinity Management Council

cc: Ms. Nancy Finley
Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, CA 95521

Mr. Curtis Milliron
California Department of Fish and Game
601 Locust Street
Redding, CA 96001

Ms. Ann Garrett
National Oceanic and Atmospheric Administration
1655 Heindon Road
Arcata, CA 95521

cc: Continued on next page.

cc: Continued from previous page.

Mr. Mike Orcutt
Director
Fisheries Department
Hoopa Valley Tribe
P.O. Box 417
Hoopa, CA 95556

Mr. Dave Hillemeier
Director
Fisheries Department
Yurok Tribe of California
P.O. Box 1027
Klamath, CA 95548

Ms. Sharon Heywood
Shasta-Trinity National Forest
3644 Avtech Parkway
Redding, CA 96002

Mr. Roger Jaegel
Trinity County Board of Supervisors
P.O. Box 1613
Weaverville, CA 96093

Ms. Robin Schrock
Trinity River Restoration Program
P.O. Box 1300
Weaverville, CA 96903

Brians copy

Trinity Lake Revitalization Alliance, Inc.
North Trinity Lake, California

Vision Passion Community

November 1, 2010

Via USPS delivery

Brian Person
Chairman, Trinity Management Council
Trinity River Restoration Program
16349 Shasta Dam Blvd
Shasta Lake, CA 96010-8400

RE: **Trinity River Restoration Program's (TRRP) obligation to mitigate low water impacts to Trinity Reservoir recreation use due to ROD releases**

Dear Mr. Person:

On June 9, 2010, the Trinity Lake Revitalization Alliance, a community non-profit organization in the Trinity Reservoir region, asked the TRRP Trinity Adaptive Management Working Group (TAMWG) to request that the Trinity Management Council (TMC) implement three mitigations documented in the TRRP EIS/EIR. The EIS/EIR has never been certified under CEQA.

The negative effect of the TRRP Flow Evaluation Alternative (the preferred EIS/EIR alternative) on reservoir levels and recreational use of Trinity Reservoir was acknowledged on page 3-284 of the EIS/EIR (emphasis added):

> "Mitigation. Implementation of the following mitigation measures would reduce Trinity and Shasta Reservoir water elevation-reacted impacts to less than significant levels.
>
> - All affected boat ramps should be extended a sufficient distance to accommodate the new water elevations.
> - Marina owners should be compensated for costs associated with moving their facilities or constructing new facilities as a result of the new water elevations.
> - Campground facilities should be modified or funding provided to accommodate the new water elevations."

Furthermore, page 1-9 of the TRRP Record of Decision (ROD) states: "The following project objectives apply only to Trinity County as the lead agency for CEQA purposes: ... Minimize avoidable impacts to recreational activities on the Lewiston and Trinity Reservoirs."

Trinity Lake Revitalization Alliance (TLRA) TAMWG Presentation

June 9, 2010 at 2:15pm

Vision. Passion. Community.

Topic: **Trinity Reservoir recreational access**

Goal: Gain USBR and TRRP support and funding for projects and management changes that improve public recreational access to Trinity Reservoir, especially during periods of low water elevation.

Why are the public and business owners coming to TAMWG with this issue?

The TRRP ROD flows that started in 2005 have shifted the timing of nearly half of the reservoir annual drawdown from historic higher flows in late summer and early fall to early to mid spring. This early water level change significantly affects recreational access and imposes high costs to marina operators during years of low precipitation with reduced snowpack. In 2008 and 2009, all but one launch ramp were unusable.

The effect of the TRRP Flow Evaluation Alternative on reservoir level was acknowledged in the TRRP EIS/EIR on page 3-284 (emphasis added):

> "Mitigation. Implementation of the following mitigation measures would reduce Trinity and Shasta Reservoir water elevation-reacted impacts to less than significant levels.
>
> - All affected boat ramps should be extended a sufficient distance to accommodate the new water elevations.
> - Marina owners should be compensated for costs associated with moving their facilities or constructing new facilities as a result of the new water elevations.
> - Campground facilities should be modified or funding provided to accommodate the new water elevations."

[*Addition 6/14/10*] Page 1-9 of the TRRP ROD states: "The following project objectives apply only to Trinity County as the lead agency for CEQA purposes:... Minimize avoidable impacts to recreational activities on the Lewiston and Trinity Reservoirs"

With the change in USFS logging policy, the area surrounding Trinity Reservoir, and the entire Trinity County, lost its primary economic source. The county is now almost completely dependent on recreational tourism for its revenue. And that tourism is dependent on reservoir and river elevations and health.

TLRA supports the TRRP and USBR efforts to restore the fishery in Trinity River since the project's success is directly linked to county tourism. At the same time, the effect on the economy and communities that were built around the existence of Trinity Dam for nearly 50 years should not be compromised.

The TRRP EIS/EIR was never certified as a California State CEQA project. Certification would make the recreation mitigation implementation mandatory.

Due to the known and acknowledged impact of the ROD flow releases on Trinity Reservoir recreation, we ask that the TRRP fund the EIS/EIR mitigation projects thereby supporting the communities adjacent to Trinity Reservoir that depend on tourism for their economic base.

The Trinity Lake Revitalization Alliance requests a written response to this request for recreation mitigation implementation, specifically the extension for boat ramps.

Thank you for your time and support.

Sincerely,

Kelli E Gant

Ms. Kelli Gant, president
Trinity Lake Revitalization Alliance, Inc.
PO Box 128
Trinity Center, CA 96091
tlra@tds.net

Enclosure: June 9, 2010 TAMWG Presentation

Since the TRRP EIS/EIR was never certified for CEQA and therefore the EIS/EIR mitigations are not mandated, we are asking that TRRP and USBR honor the NEPA mitigations and work with Trinity reservoir stakeholders and USFS (the USBR's managing partner) to implement the measures.

The USBR and Recreation

The USBR has a history of providing quality recreation access and opportunities at its reservoirs. Some reservoirs have Visitor Centers (e.g., San Luis Reservoir) and others highly successful recreation programs (e.g., Whiskeytown Reservoir).

Reclamation plays a major role in meeting the increasing public demands for water-based outdoor recreation facilities and opportunities. The 289 recreation areas developed as a result of Reclamation's water projects are among the Nation's most popular for water-based outdoor recreation.

Recreation opportunities and demand are high at Trinity Reservoir, and there is a growing demand for more services and facilities when there is access to the water.

There are numerous public and USBR policies that support improving recreational access to Trinity Reservoir, for example:

A) The Federal Water Project Recreation Act of 1965 (Pub. L. 89-72), as amended, states that "there is a Federal responsibility to provide opportunities for public recreation at Federal water projects."

B) *USBR Recreation Management Policy* is a guide for implementing "a successful recreation program at Reclamation water resource projects."

C) There is legislation, federal codes, and policies that acknowledge that the public demand for recreation is growing. For example:

- Authorization and Adjustment Act of 1992, Public Law 102-575, 106 Stat. 4690, Title XXVIII (Reclamation Recreation Management Act)

D) The Federal Executive Branch Policy on the *Establishment and Administration of National Recreation Areas,* Circular No. 1, March 26, 1963, states "... that greater efforts must be made by Federal, State, local governmental, and private interests to fulfill adequately the steeply mounting outdoor recreation demands of the American people."

Question: Was jurisdiction permanently transferred to the USFS, or is the USFS a management partner?

Question: If a partnership, where can we get a copy of the Interagency Agreement between the USBR and USFS for the management of Trinity Reservoir?

The Trinity Reservoir -- Business and Tourism

The communities around Trinity Reservoir, the state's third largest reservoir, depend on water-based tourism for 90% of the economy since the end of USFS logging, closure of a USFS ranger station, and loss of mining.

The remaining economy is from residential construction, which is directly tied to tourists discovering the area and investing.

When tourists cannot access the lake, very few come to the lake area during the summer. Over the last four years, the combination of limited lake access and the recession are primary contributing factors in the closure of all local restaurants in the area, extreme cutbacks at the marinas, and the loss of construction jobs.

There have been periods of low reservoir water in the past, see Figure 1, but this latest drought is the only period during which the Trinity Lake communities did not have the jobs from USFS logging to reduce the economic impact of loss of lake access.

Trinity Center Marina is a critical component to a new marine maintenance business opportunity for the area. This is the first new, job-producing business for the area in over ten years. The advantage of Trinity Center is that the launch ramp has access to a maintenance yard on private property that eliminates a commercial houseboat transport to Weaverville for $2,600/round trip. (Due to USFS policy changes, boat maintenance can no longer be performed on USFS land without costly facility improvements.)

TLRA understands the communities' responsibility to market the area and introduce tourists to new activities and has been actively advertising the area this year with a new campaign -- an area website (www.northtrinitylake.com) and a Facebook presence with 690 followers.

Nevertheless, access to the lake water is still the gating factor to drawing tourists, as seen this Memorial Day weekend. Despite the sluggish national economy, Memorial Day 2010 was the best business weekend in two years for most businesses -- water brings tourists.

Ramp and Campground Unavailability from 2000-2010

TLRA acknowledges that there will always be times of low reservoir water levels. And even in low water times, there is plenty of water in the lake for recreation. Access is the issue.

A) The Trinity Center ramp was not available at the end of the tourist season in 2001 and 2002 and was not usable from July 30, 2008 until April 20, 2010.

B) KOA marina has not been usable since August 2008.

C) Cedar Stock ramp was unavailable the entire season of 2008 and 2009. There is a small finger of dirt to the south of their ramp that prevents use of the ramp whenever the water level drops below 2,308 feet, in contrast to the documented ramp elevation of 2,230 feet.

D) Trinity Alps Resort - Fairview Ramp was not usable from June 17, 2008 to Monday (June 7, 2010) Ramp unavailable August 2001, 2002, and 2007.

E) Minersville is available most low water years, but does not meet the needs of most boaters. The distance to overnight lodging and other services, and the lack of a launching dock and adequate parking, makes using Minersville an inconvenience to any multiple-day tourist and local residents.

F) Estrellita Marina, the best mooring area on the reservoir and a low-water ramp, was closed by the USFS in 2009. Negotiations to reopen Estrellita or open a third marina for year-round houseboaters have gone nowhere.

G) Alpine Campground, managed by Hodge Management a permittee of the USFS, is not opened if the lake level does not come up to at least 5 feet on the ramp. As of June 8, the water is 10 feet below the ramp.

Restrictions on Reservoir Recreation Access and Facility Growth

There continues to be increased interest in Trinity Reservoir as a tourist and second-home destination.

Despite the increase in tourism during high water years, the Shasta-Trinity USFS performed a "demand study" for a new marina after the closure of Estrellita in 2009. The USFS determined that there was no demand for a new marina. 2009 and 2008 were our worst drought years since the early 1990s. [*Correction 6/9/10: The demand study was not performed by request of the Trinity Lake Houseboat Owners Association.*]

Other issues:

A) The USFS seems to not be making adjustments to management policies to reflect the new lake levels and releases that started in 2005.

B) There is a waiting list for marina slips, but USFS is restricting marina growth and new marinas on the lake

C) There is a waiting list for houseboat permits, but the USFS will not increase or reissue permits. A demand study about 1978 set the available permits at 103, while only 98 are available today. Studies show that each permit equals at least $12,500 per year spent in Trinity County, and the Trinity County Treasurer estimates that in most cases the revenue in the county is many times that much because houseboat owners travel from outside the county and require additional services for their boat, themselves and their guests.

D) The Trinity Lake Houseboat Owners Association funds water testing at eight sites on the lake to show that there is no impact to the lake from houseboat gray water.

E) Cedar Stock cannot increase dock capacity due to the parking requirement of two cars per houseboat slip rental and one per small slip rental. No cars can be parked on dirt below the reservoir high water mark. A site for new parking is

limited to the top of the hill near Highway 3, due to USFS policy, therefore requiring a shuttle service.

F) A $4 million CalBoating grant to improve Trinity reservoir ramps was allowed to expire in 2009 partly due to an impasse between the USFS and the North Coast Integrated Regional Water Management over the use of asphalt. Alternatives were apparently not considered.

G) The Trinity Lake Houseboat Owners Association has to finance lake water calcium tests to prevent the implementation of a Quagga and Zebra mussel program. Tests show that such programs are unwarranted on the reservoir.

Other Requested Changes

A) Define a new "mean high water level" for recreational access and marina projects that reflects the reality of reservoir water management

B) Use a combination of ramp extensions, auxiliary ramps, and dredging to modify KOA's ramp, Trinity Center ramp, Fairview ramp, and Cedar Stock ramp to allow recreational access to the end of the tourist season (Memorial Day to Labor Day) during most dry to extreme wet water years.

Dredging is common on reservoirs and in the San Francisco Bay and Delta for marina access:

1) The new Alviso boat ramp in San Jose reopened June 5 on SF Bay requiring the dredging of the 4 mile Alviso Slough

2) San Leandro Marina channel is 2.5 miles and dredged to maintain marina access

3) Dredging is done at Keswick Reservoir boat ramp (Spring 2010)

Trinity Reservoir is much less environmentally sensitive than the Bay or Delta, so such dredging projects should not be impossible.

C) Improve recreation management

1) Shift USBR reservoir management to a partner/partnership structure that promotes and improves the reservoir for recreation and economic benefit.

The Trinity Lake Revitalization Alliance highly recommends a co-management partnership between the USFS and Trinity County similar to Keswick Reservoir (BLM and Shasta County)

2) Update the Master Interagency Agreement between the USBR and USFS to reflect public input and the new water level realities

3) Develop a legislative, project-specific recreation development plan for Trinity Reservoir, similar to the other USBR plans that were implemented after the reservoirs were constructed:
   - Recreation Development, Sanford Reservoir Act of 1964, Public Law 88-536, 78 Stat. 744
   - Reclamation Development Act of 1974, Public Law 93-493, 88 Stat. 1486, Title VI for Lake Berryessa

D) Help improve fishing opportunities in the reservoir. Early river releases seem to have in impact on small mouth bass.

E) Implement a reservoir drought recovery plan

Figure 1 -- Historic Trinity Reservoir Water Levels (based on CDEC)

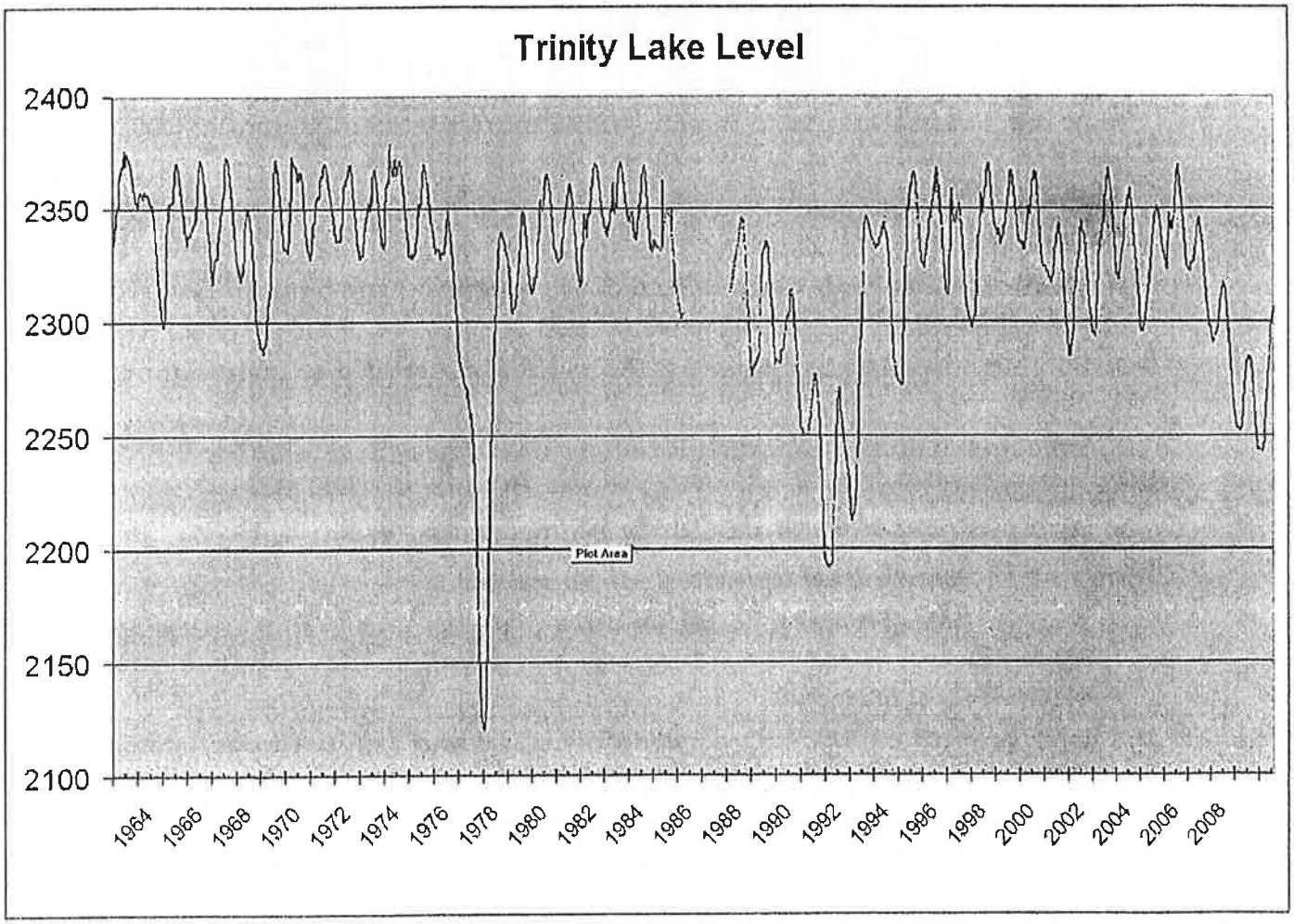
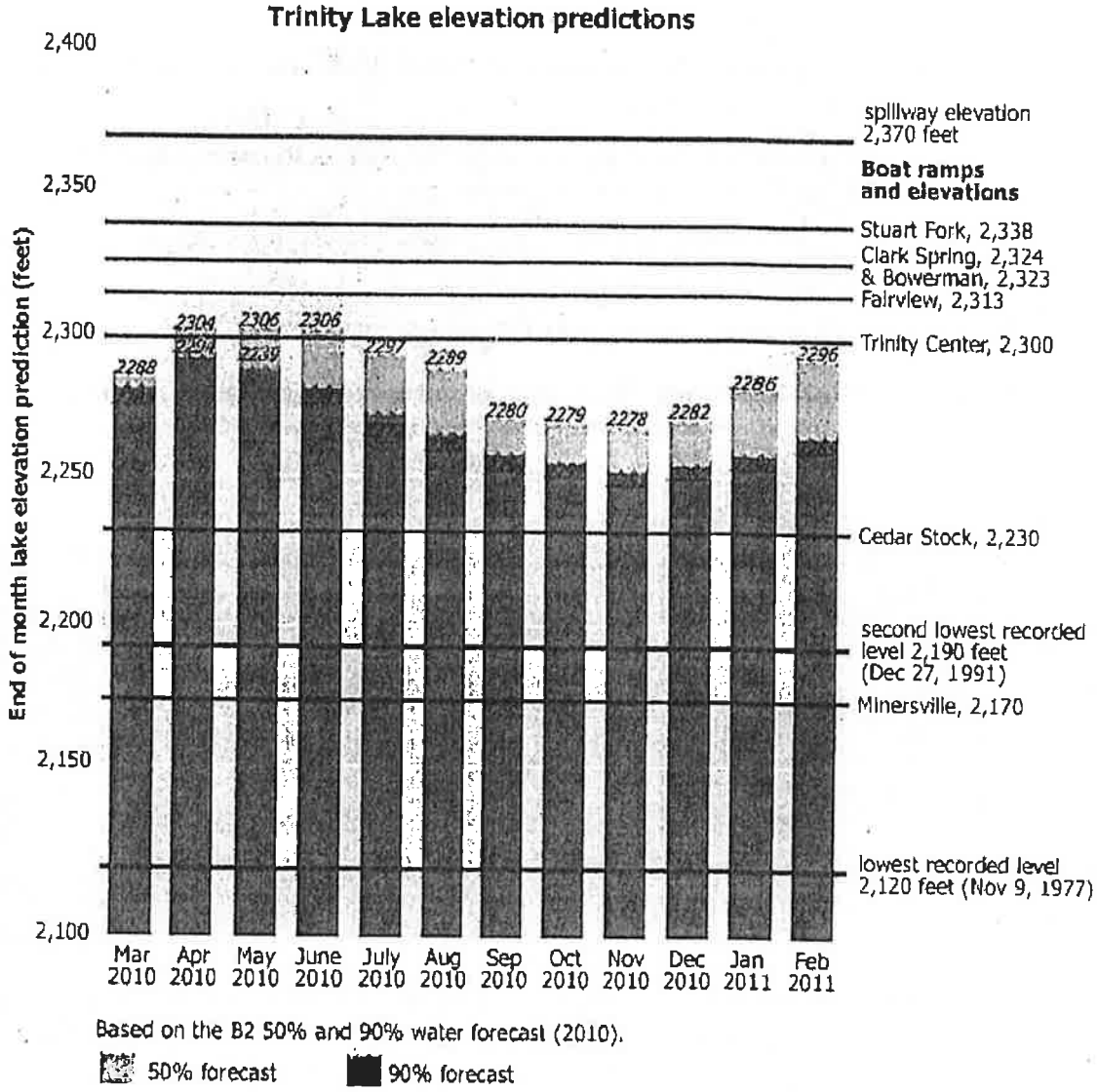


Figure 2 -- USBR 2010 Trinity Lake Elevation Predictions



Corresponding acre-feet:

- 2,370' (full lake) 2,447,700 af
- 2,338' (Stuart Fork ramp) 1,957,780 af
- 2,324' (Clark Springs ramp) 1,765,410 af
- 2,323' (Bowerman - Alpine View ramp) 1,751,280 af
- 2,313' (Fairview ramp, 2,321 is safe launch line) 1,621,240 af
- 2,295' (Trinity Center ramp) 1,465,500 af
- 2,255' (Estrellita ramp, shale) 120'
- 2,242.8' (low water mark Dec 2009) 894,338 af
- 2,230' (Cedar Stock ramp, not usable below 2311') 794,700 af
- 2,170' (Minersville ramp) 424,340 af
- 2,120' (lowest lake level on record) 222,350 af

TRINITY RIVER RESTORATION PROGRAM

P.O. BOX 1300, WEAVERVILLE, CA
PHONE: 530-623-1800, FAX: 530-623-5944

MEMORANDUM

TO: ROBIN SCHROCK
FROM: ANDREAS KRAUSE
CC: DJ BANDROWSKI, ERNIE CLARKE
SUBJECT: **HISTORY OF INTERACTIONS WITH THE TRINITY RIVER GUIDE ASSOCIATION**
DATE: 12-5-11

DRAFT Version 12-5-11.

The table below provides a summary of the interactions to date between the Trinity River Restoration Program (TRRP) and the Trinity River Guide Association (TRGA). The summary was developed using the best available information i.e. archived calendars and correspondence from Andreas Krause and DJ Bandrowski. Files from Jennifer Faler were not available while developing this memo. Consequently, this summary may have some important omissions. Members of the TRGA have attended more meetings of the Trinity Adaptive Management Working Group (TAMWG) and the Trinity Management Council (TMC) than are mentioned below. Time constraints precluded researching meeting minutes from the TAMWG and TMC. DJ Bandrowski, Charlie Chamberlain (USFWS) and Aaron Martin (Yurok) provided a cursory review of this summary.

Date	Location	Topic	Participants
10/12/10	Public Meeting – Douglas City School	• Review and public comment on Douglas City, Lower Steiner, Lorenz Gulch, Wheel Gulch, and Limekiln site designs.	Liam Grogan (TRGA)
10/20/10	TRGA mtg - Indian Creek Lodge	• First TRGA meeting attended by TRRP. • ROD / TRRP Program overview • Flow regimes and intent. • Gravel augmentation, gravel transport, and pools. Showed preliminary data of pool changes at Cemetery Hole. • Habitat and Large Wood • Phase 2 design concepts • Fish response: Spawner survey trends. • Yurok presentation regarding their tribal harvest regulation.	TRGA Andreas Krause (TRRP) Jennifer Faler (TRRP) Charlie Chamberlain (USFWS) Ernest Clarke (USFWS) Aaron Martin (YTFP) Troy Fletcher (Yurok) Dave Hillemeier (Yurok) Robert Franklin (Hoopa)
11/17/10	TRGA mtg - Indian Creek Lodge	• 2011 site designs	TRGA Jennifer Faler (TRRP) DJ Bandrowski (TRRP)
11/24/10	TRRP office	• Mapping of where guides identified high quality habitat. Due to time constraints, we were only able to map a small portion of the river near Lewiston and down by poker bar.	Paul Catenese (TRGA) ??? (TRGA) ??? (TRGA) Andreas Krause (TRRP) Aaron Martin (Yurok) Dave Gaeuman (TRRP)

Date	Location	Topic	Participants
12/6/10	TRRP office	• Steve Townzen stopped the TRRP office by to complain about turbidity at the Lowden Ranch project and the project design / construction in general. Andreas Krause and Kent Steffens investigated turbidity complaint and reported findings back to Mr. Townzen.	Steve Townzen (TRGA) Andreas Krause (TRRP)
12/14/10	TAMWG meeting - Redding	• Guides attended and Travis Michele presented TRGA concerns at beginning of meeting.	Travis Michele (TRGA) Steve Townzen (TRGA) ??? (TRGA)
1/19/11	TRGA mtg - Indian Creek Lodge	• Habitat assessment intended update (don't think I got through it, I think there was a lot of discussion so we tabled the rest for later)	TRGA Jennifer Faler (TRRP) Robert Franklin (HVT) Andreas Krause (TRRP) Charlie Chamberlain (USFWS) Ernest Clarke (USFWS) Aaron Martin ??? Wade Sinnen (DFG)
1/27/11	TRRP office	• Presented design plans for projects in the Douglas City to Junction City area to Steve Townzen. For a short while, the TRGA identified Steve Townzen as the point of contact for design related items.	Steve Townzen (TRGA) DJ Bandrowski (TRRP) Andreas Krause (TRRP)
2/10/11	Flow Scheduling Mtg.	• TRGA representatives attended as members of the public and provided input to the TRRP flow workgroup regarding 2011 flow release planning.	Liam Grogan (TRGA) ??? (TRGA)
2/15/11	Public Open House – Junction City	• Public comment on design for Wheel Gulch site	Ed Duggan (TRGA) Steve Townzen (TRGA)
2/16/11	TRGA mtg.	• TRRP was scheduled on agenda but meeting was cancelled last minute by guides.	N/A
3/17/11	Flow Scheduling Mtg.	• TRGA representatives attended as members of the public and provided input to the TRRP flow workgroup regarding 2011 flow release planning.	Liam Grogan (TRGA) ??? (TRGA)
4/8/2011	Float Trip	• Upper Junction City Design planning	Steve Townzen (TRGA) Travis Michele (TRGA) DJ Bandrowski (TRRP) Dave Gaeuman (TRRP) Charlie Chamberlain (USFWS)
4/13/11	TMC Meeting - Weitchpec	• Travis Michele (TRGA) attended TMC meeting for: 1) 2011 flow schedule, and 2) TMC discussion of response to TRGA letter to TAMWG. I believe Mr. Michele provided public comment during the meeting.	Travis Michele (TRGA)

Date	Location	Topic	Participants
4/15/2011	Float Trip	• Pre-high flow float trip, Lewiston to Steelbridge. Purpose: 1) was to facilitate communication and education in both directions; 2) observe river prior to 11,000 cfs release; and 3) get input from guides on constructed rehab sites.	Aaron Martin (YTFP) Andreas Krause (TRRP) Dave Gaeuman (TRRP) Steve Townzen (TRGA) Travis Michele (TRGA)
6/16/2011	TRGA mtg - Indian Creek Lodge	• TRRP was scheduled on agenda but meeting was cancelled last minute by guides.	N/A
7/20/2011	TRGA mtg - Indian Creek Lodge	• TRRP was scheduled on agenda but meeting was cancelled last minute by guides.	N/A
8/17/2011	TRGA mtg - Indian Creek Lodge	• Adult holding – citizen science initiative • USFS liaison Upper Junction City and Wheel Gulch site designs	TRGA DJ Bandrowski (TRRP) Wade Sinnen (CADFG) Ernie Clarke (USFWS) Robin Schrock (TRRP)
8/22/2011	Float Trip	• Post high flow float trip, Lewiston to Steel Bridge. Purpose: 1) was to facilitate communication and education in both directions; 2) see change from 11,000 cfs release.	Andreas Krause (TRRP) DJ Bandrowski (TRRP) Dave Gaeuman (TRRP) Aaron Martin (Yurok) Charlie Chamberlain (USFWS) Arnold Whitridge (TAMWG) Steve Townzen (TRGA) Travis Michele (TRGA) Scott Stratton (TRGA) Others???
9/21/11	TRGA mtg.	• Scheduled to present design information. Guides cancelled meeting.	N/A
10/4/2011	Float Trip	• Float Indian Ck – Evans Bar. Purpose: 1) facilitate communication and education in both directions, and 2) get guide input on Indian Creek and Reading creek project sites (constructed) and the Phase 2 designs.	Andreas Krause (TRRP) DJ Bandrowski (TRRP) Dave Gaeuman (TRRP) Aaron Martin (Yurok) Charlie Chamberlain (USFWS) Arnold Whitridge (TAMWG) Travis Michele (TRGA) Liam Gogan(TRGA) Shannon Engh(TRGA)

Trinity River Guides Association Float with TRRP Program Partners

Float Date: Monday, August 19th, 2011
Location: Diversion Pool to Steel Bridge
Conversation and Dialog Notes – Final Version (9-22-11)

Guide Participants:
Travis Michel
Steve Townzen
Scott Stratton

TRRP Program Participants:
Aaron Martin, Yurok Tribe
George Kautsky, Hoopa Tribe
Eric Wiseman, USFS
Alex Cousin, Trinity County RCD
Charlie Chamberlain, USFWS
Arnold Whitridge, TAMWG
Dave Gaeuman, BOR
Andreas Krause, BOR
Brandt Gutermuth, BOR
DJ Bandrowski, BOR
Kent Steffens, BOR

Discussion Items (comments, observations, or questions):

Above New Bridge

- Stopped below weir hole/diversion pool and discussed gravel augmentation program both recent perspectives (Dave) and historical perspectives (Andreas).
- Travis had a question in regards to how much Coarse sediment has been added to the river over the past several years and how is that determined annually and in regard to water year type?
- Discussion regarding the annual amount of gravel that should be augmented. Dave reports that 10-15,000 cubic yards annually is what has been determined appropriate for our flow regime and logistical considerations. 10,000 is a scaled down average from the original Flow Evaluation Study recommendations of 60-70,000 on a Wet year designation which is arguably not feasible based on implementation logistics and reach wide constraints.
- Dave discussed the theory of adding gravel for quick influx vs. deficit control. Dave does not feel that we are in a deficit and based on recent analysis which suggests 4-7000 cubic yards is more appropriate.
- Discussion continued regarding the process/protocol that is in place to determine the management actions regarding gravel augmentation program in relation to the Record of Decision (ROD). Adaptive management is the tool set that drives the process toward action; set a hypothesis and test it over time and make adjustments based on analysis and best available science.
- Dave explained that the amount of gravel is determined by site specific conditions and characteristics. Augmented gravel at our rehab project sites is much different than high flow gravel injection.
- Question was asked about how much control our contractors have on the amount of gravel placed on-site. It was explained that we have on-site government representatives that make site specific final determinations not the contractors or equipment operators.

Lewiston Reach (New Bridge to Old Bridge)

- Observations of how much change/evolution has occurred throughout this reach, some of the deeper holes (deadwood area) were being maintained.
- Observations were made from quick snorkel surveys that there was some adult "springers" were holding in the pools and at the convergent flow area near the outlet of cableway (miller) side channel.
- New mid-channel bar had formed upstream of cableway and downstream of side channel entrance. General observations that the bar looked great and that spawning should increase across this new feature area. Appears that is feature is still evolving and would likely change considerably over time.
- Cableway (miller) side channel entrance looked shallower compared to post construction, but still was maintaining itself and appeared that it would persist through the winter base flow period. A lot of vegetation was removed (mechanically or hydraulically) on river left since construction in 2008.
- Recommendations from guides that the TRRP should strategically place 5-6 ft boulders throughout the river, but especially within the Lewiston reach for cover and hydraulic diversity.

Below Old Bridge (Hoadley Gulch)

- Stopped and had lengthy discussion on constructed gravel bar on river right. Observed how 11K cfs changed this area dramatically, setting up a new transverse bar. Also observed constructed side channel maintained upper inlet, but lower inlet had filled in creating a backwater eddy in the side channel.
- Question came up on how far does gravel move during a high flow release? Discussed that the gravel typically moves from bar to bar not miles down the river. Also discussed how the new bar at Hoadley Gulch formed from the upstream gravel augmentation had transported to this area and is starting to develop a new bar feature.
- Steve asked how this Lewiston/Hoadley Gulch area looked to the TRRP. Eric answered that in general good, better spawning, less holding, great juvenile rearing area.
- Scott mentioned that there definitely was not as much holding, more browns, and also discussed how shade is critical for having good fish utilization.
- Question was asked by TRRP, where on the river is it important to have adult holding, should we be looking at it on a reach scale level or be focused on each existing pools. How should it be partitioned out?
- Steve encouraged us to be looking at holding water in our specific design and throughout the design process. Also encouraged us to be very focused on not destroying existing/functioning holding waters.
- Scott said that the rule of thumb for how far apart adult holding pools should be throughout the upper river is approximately 1/2 mile.

Cemetery Hole/Sawmill Reach

- Just above cemetery side channel entrance within the flat water/pool area, there was a suggestion of constricting the right side of the channel, since it is over-wide currently. Observation was made that the river has deposited some new gravel at the existing gravel bars on river right and trying to constrict itself.
- Observation that the water surface elevation seemed lower, also mentioned that this pool is good brown trout habitat.
- Observation that the cemetery side channel inlet was taking on more water than historically.
- Observation that the area just above cemetery hole looks good and could become more of a spawning reach, this area has been called the "pungees" since it has a lot of dead snags that look like pongee sticks.
- Observed that the hole just above cemetery hole has maintained itself through the high flows.
- Observed cemetery hole has filled in at least 3 ft since the high flows and has adjusted its hydraulic condition, adjusting the scour location.
- Eric snorkeled through the hole and did not observe any fish utilization.

- General observations throughout the sawmill reach that there was both subtle and significant changes since the high flows. Constructed gravel bar on river left (upstream) had maintained, but the downstream bar had mobilized downstream.
- Suggestion was made that more boulders should be added to the mainstem in this section for diversity.
- We did not look at cemetery side channel during the float, although did see various outfall discharge locations that had changed from years past.
- Sawmill injection area next to river right cliff is still filled in and doesn't appear that much scour took place. Approximately 1-2 ft was scoured off the top bringing the top of gravel below water surface at 450cfs.
- Suggestion was made to re-constrict this river left section and force it back into the bedrock hole area. Discussion took place on how to re-constrict, possibly more Coarse sediment with larger materials to minimize transport, possibly a wood jam structure to push the flow back into the bedrock wall.

Lower Sawmill/Rush Creek Pool Reach

- Observations were made that some of the upper bars are becoming more pronounced and growing at a faster rate. Some of these bars are forcing the base flow water around more and is much more diverse.
- Observation that the water surface elevations throughout this reach appear to be lower.
- Rush Creek Pool area has been scoured down to bedrock and very little aquatic vegetation is present.
- Historic Rush Creek side channel river-left (backwater slough – old hatchery rearing area) has not opened up and still remains a static backwater area with little habitat value. This area is currently the site of the upper Rush Creek rehabilitation project area, but due to landowner constraints this has been placed "on-hold"
- Rush Creek delta area has changed dramatically and a substantial amount of gravel has been deposited and formed into new bar features downstream of confluence area.
- Observation of more erosion has taken place on river left bank downstream of rush creek confluence.

Gold Bar/Dark Gulch/Bucktail Reach

- Observation from earlier this year that the constructed floodplain at Gold Bar was inundated at a lower discharge than post-construction. This suggests that a new hydraulic control has been created somewhere in this section and has caused the water surface elevation to increase on top of the floodplain at approximately 2500-3000 cfs level.
- Observation that the Gold bar side channel has evolved significantly since construction and now has a new profile and planform pattern, the bottom elevation is higher, and thus making the channel shallower.
- Observation that a large amount of new gravel has been deposited on river right, Gold Bar floodplain fringe.
- Question – Where did all this gravel transport from? Most likely from the Rush Creek delta area.
- Discussion regarding how far can Coarse sediment gravel transport in one peak flow such as the 11K cfs.
- Natural side channel (Dark Gulch) river right has maintained itself but the entrance hydraulics appear to have adjusted with more new gravel that has deposited and thus extending the entrance upstream farther.
- Observation at the bottom end of natural Dark Gulch side channel, backwater outlet (Blue Lagoon) area has maintained and is approximately 10-15 ft deep and is holding a large school of "Springers".
- Observation that the downstream Dark Gulch constructed features have evolved negatively since construction and downstream side channel entrance has almost closed off.
- Observation that the upstream Bucktail reach has maintained fairly static through the high flow release.
- Observation that Bucktail hole below Bucktail bridge has scoured significantly and is one hole on the upper river that is now deeper after the high flow than before. The constriction of the bridge induced this scour.
- Observation that the historic Bucktail hole next to the bedrock outcrop has maintained its depth, but the "tail-out" has evolved to a mid-channel bar split flow that is dramatically different then previous years.
- Question was asked about where this influx of gravel transported from to form this new mid-channel bar feature? It is hypothesized that it may have routed from the scour below the bridge or upstream farther off the bottom of the bed. More analysis is needed to determine this influx.

Lowden Ranch Reach

- Floated through the new constructed upper side channel and backwater habitat area. General observations and comments that this area will be great rearing habitat and will be a high production area.
- Observation that the old steelhead holding water upstream of the forced meander (IC2) island area has increased and will fish well. This was a major concern before the high flow, but has evolved for the better.
- Observation that the forced meander control that was in-place from the truck crossing area has scoured and is running faster and has changed the upstream hydraulic conditions favorably.
- Discussion at the new gravel bar forced meander island area (IC2) has maintained It's structural integrity and provided the needed topographic steering during high flows. The fines were eroded off the top, but the fines still remain below the cobble surface and will continue to revegetate itself overtime. Clump plantings are doing well and held up through the high flows. Alcove at the downstream end has filled in slightly and has partly covered log structure. Log structure in alcove was placed to prevent head-cut and was successful in providing this structural condition.
- Discussion regarding high flow gravel injection at the Lowden reach, sediment monitoring by GMA, and two-dimensional hydraulic modeling prediction analysis done prior to high flows by Dave Gaeuman. Dave explained the process and what was done and what we will learn through this additional analysis work coupled with the realtime monitoring results from GMA that will help inform management actions for future gravel augmentation and high flow gravel injection volumes and methods.
- Observation that the Lowden reach looks great and has increased steelhead holding water. This reach has evolved for the better and is much more complex and dynamic than prior to rehab construction activities.
- Observation that the log jams appeared to be providing areas or rearing and holding both and have helped induce scour holes through the high flow event. Guides said that they have been hooking into some fish along the log jam structures and are looking forward to the salmon run this fall to test their performance.
- Observation that the downstream "islands" (anastomosing channels) looked much better after the high flows have scoured the bed, eroded the banks, and scoured around the wood structures. The evolution appeared positive and may improve the steelhead fishing in this reach.
- Observations that the log jams were holding fish from this visit and prior visits.

Grass-Valley Creek Trinity House Gulch Reach

- Observation that this reach has changed dramatically after the high flows with deposition of Coarse sediment gravel forming a new sinuous channel meander pattern upstream and downstream of Grass Valley Creek (GVC) confluence.
- Observation was made by one of the guides that this reach will fish much better than previous years and has formed into "sexier water", turning a cesspool below GVC into a swing fishing area for steelhead.
- Discussion on whether or not there should be additional gravel augmentation within this reach. The guides suggested that there was enough gravel in this reach and that adding more may have a negative impact.
- Observation that the Trinity House Gulch (THG) constructed side channel closed off due to the influx of gravel deposition in the side channel inlet
- Stopped at the downstream end of the THG project and discussed the historic steelhead water that was destroyed due to the constructed gravel bar on river left. Discussion surrounded this issue and the guides concern of some of our projects containing designed features that are in areas of existing adult or juvenile habitat that is of good quality. Discussion continued and one of the guides said that he hopes this downstream section will hold and fish as well as it historically did now that the hydraulics have changed and is much shallower than before construction.
- Observation was made that since the TRRP opened this area up by removing vegetation and building access roads that there has been an influx of recreational fisherman using this reach and accessing it by foot. They are coming in from Browns Mountain Road.
- Observation of six browns in the constructed wood jam at the downstream end of the THG side channel.

Poker Bar Reach

- Observation that the deep hole near Ponderosa Lane (Scott's Hole) has maintained its depth through the high flows and is still holding fish well.
- Observed a lot of wood/trees that has fallen in throughout this reach during the high flow event this past year. In general a lot of wood is in the river now, where in the past this the wood was absent.
- Observed some new gravel bars forming and old ones that have become more pronounced.
- Poker Bar Hole (Stott Hole) has maintained its depth through the high flows.
- Discussed Paul Cantanese' isolated pond area and a potential habitat development project in the future.
- Throughout this reach the hydraulic controls have migrated down river farther than in past years.

Limekiln Gulch/Upper Steel Bridge Reach

- Observation that more gravel had been deposited in this area than expected due to the lack of source material upstream in this bedrock confined reach. Discussion surrounded this topic and the question of how this material was routed into this reach, upstream source or from the bed...?
- Stopped and looked at the proposed Limekiln Gulch Rehabilitation Project site starting next to the old "Feathered Edge" project on river left. DJ, Dave, and Charlie explained the design features, goals and objectives, and expected evolution. Discussed existing mainstem steelhead/salmon habitat and how it may be affected by the project. Discussed lack of access and cultural resource concerns for the spoil location on river left. Discussed proposed side channel characteristics, location of inlet and outlet areas, and overall scale of project in relation to existing side channels on river right.
- Floated through downstream split flow channel at the bend and looked at the convergence area of the two channels. There was some deposition in the deeper hole and had filled in approx. 2-3 feet.

General Observations/Conclusions/Wrap-Up Conversation

- Through all the discussions and observations, there was a much more positive trend than negative. The 11,000 cfs high flows definitely did some work on the river, moved a lot of Coarse sediment gravel, and altered the river in several locations (both for the positive and negative). Bank angles have generally been decreased due to high flows. Lots of new trees have fallen into the river throughout the upper river due to high flows. Formation of new sand beaches and increase in size to several existing sand beaches (increased juvenile lamprey habitat).
- Need to preserve, maintain, and construct adult holding habitat (deeper pools) in our future rehabilitation project sites. This needs to be a focus and have more awareness of this concern and address this on a technical level.
- A lot of rebar in the river from monitoring/construction activities. Need to be more aware of this concern and come up with some alternative locations.
- A lot of gravel in locations that were unexpected and at locations where we have not augmented or constructed project sites.
- Need to look at the river on a broader timescale and have a multiple year perspective in regards to both positive and negative changes.
- Stay away from the homogenous gravel at the project sites and not build "Alluvial Deserts" in the future.
- There has been a shift in the depth of the river, has this been caused by a lower water surface elevation or gravel deposition?
- Observed a lot of good steelhead holding water (runs) throughout the upper reach.
- Discussions regarding the Bureau of Reclamation reservoir draw down concerns. Will there be a safety of dams' release? And is it possible to maintain a constant 450 cfs flow through the November?
- Discussed the need to do another float this fall (September) from Indian Creek to Evans Bar.

Trinity River Restoration Program

Trinity River Adult Fish Holding Habitat Assessment

Concept: Investigate adult fish holding habitat to ensure that the complete fish life history is considered in future Trinity River Restoration Program (Program) actions.

Study Team: Program staff.
Interested Program partners.
Interested Trinity River Guides Association (TRGA) members.

Question: How changes on the River influencing adult fish holding habitat?

Location: Restoration reach, Lewiston Dam to North Fork.

Requests: Identify and describe (e.g. pool size, pool depth, number of fish) locations where adult fish hold and for how long.
Document observed changes in those locations.

Target species: Steelhead and spring Chinook.

Additional input: Identify areas of fine sediment deposition.
Identify fish stranding areas.

Proposed Activities:

- Complete information gathering on pools (TRGA members and Program staff).
- Report on pool study (Program staff).
  - Quantitative characterization of sampled pools.
  - Are holding pools close to gravel injection points being filled?
  - Are holding pools removed from gravel injection points being filled?
- Collect information from guides on steelhead holding habitat areas of interest / concern before and after the 11,000 cfs discharge (TRGA members and Program staff).
- Based on the success of this initial citizen science effort, the Program will develop a future study plan to evaluate changes in adult holding habitat; the study plan will be externally reviewed and could involve partnership with the guides (TRGA members and Program staff).

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

Adult Fish Holding Habitat Assessment

Data Sheet

Date: _____

Observer (please complete this section once per trip per boat)	
Name: _____	Email: _____
Phone: _____	_____
Number of years guiding on the Trinity River:	_____
Estimated number of hours spent on Trinity River per year:	_____
Focal Areas of the River:	_____

Holding Area Location	
Brief description of location:	_____
How was the location identified? (GPS, Map, Prior knowledge of site)	
Map number: _____	River mile: _____
Coordinates: _____	

Holding Area Characteristics	
<u>General Description</u>	
What type of holding area is it? (salmon holding, steel head run, etc)	_____
Approximate depth of pool. (<5 ft, 5-10 ft, 10-20 ft, >20 ft)	_____
<u>Change in Holding Area Depth</u>	
Current depth compare to the depth before the 2011 release. (deeper, same, shallower)	_____
Current depth compare to the depth a few years ago. (deeper, same, shallower)	_____
<u>Change in Holding Area Extent</u>	
Current area compare to the area before the 2011 release. (increased, same, decreased)	_____
Current area compare to the area a few years ago. (increased, same, decreased)	_____

Holding Area Characteristics continued...

Change in Holding Area Location

Has the location of the holding area changed? (upriver, downriver, left bank, right bank)

New Holding Areas

Were any new holding area identified? (yes, no)

Where?

Change in Holding Area Habitat Value

Current habitat value compared to value before the 2011 release. (better, same, worse)

Current habitat value compared to value a few years ago. (better, same, worse)

What attributes of the holding area have changed that most affect its habitat value?

Indicator Species

Species Observed	Approximate Number	Notes

Other Areas of Interest: significant changes in the river, fine sediment deposition, fish stranding, etc

Location	Issue

General Notes / Comments

Thank you very much for your participation and input! Please direct questions to Ernie Clarke at (530) 623-1815.

TRRP Implementation Update

Prepared for: Trinity Adaptive Management Workgroup (TAMWG)

By: DJ Bandrowski

Date: December 9th, 2011

Phase I Review

- The SAB and their Support contractor started the Phase I Review in Oct.; planned completion date is July 2012.
- Anchor QEA and Stillwater Sciences were awarded a contract to assist the SAB through the Phase I Review.
- The SAB developed a draft scope of work and they are incorporating partner comments currently.
- The Design Team developed Summary Fact Sheets for all Phase I Channel Rehab sites to assist the SAB.
- The TRRP has provided the SAB with existing data/reports to assist in the Phase I Review process.
- The SAB have been engaging with the USGS Geomorphic Assessment and are currently recommending ways to develop synergy between these two efforts and reduce any duplication.
- The SAB and their support contractor spent two days in Weaverville touring some of the rehab project sites and refining their scope of work and execution plan. Will be presenting formally at the TMC meeting.

Implementation Activities:

- First Phase II project site; Wheel Gulch, is 100% complete with all civil construction activities as of November 2011. The Wheel Gulch revegetation planting will take place January through February 2012.
- The 2010 Phase I projects (Lowden Ranch, Trinity House Gulch and Reading Creek) Began revegetation planting this week and will continue through January 2012.
- Two channel rehab and a revegetation project are being planned and contracted for 2012 construction, projects include: Lower Steiner Flat (LSF) and Upper Junction City (UJC) channel rehab project sites and Indian Creek Revegetation/Bank naturalization project.
- High flow gravel augmentation planned for May 2012 at Diversion Pool and Lowden Ranch.

Planning and Design:

- TRRP Design Team endorsed moving forward with LSF, UJC, and Indian Creek Reveg project sites for 2012, but recommended that the projects be re-designed to reflect Design Team comments from October 2011.
- Environmental compliance documents for LSF and UJC will be rolling out for public review in January 2012 with a public tentatively planned for January 12th at Douglas City Fire Hall (Min of 30 day review period).
- Large Wood Informational Meeting was conducted in October 2011 for public education and outreach.
- Met with Trinity River Guide Association (TRGA) members on several occasions to discuss 2012 project sites. Incorporated TRGA recommendations into 2012 designs/mods. Floated the river on two separate occasions with the TRGA to learn from their observations after the 2011 high flows. (See handout for float observations)
- Coordinating with Dept of Water Resources and Trinity County on new FEMA 100 year floodplain study.

Infrastructure Improvements:

- Planning on beginning well-grant infrastructure modification program starting in January 2012.
- Developing temporary modification design to the Bucktail Dike, Spillway, and culvert system.
- Will be performing detailed hydraulic analysis and Cost-Benefit analysis for Bucktail Bridge.

Data Collection

- 2011 Aerial photos have been acquired, full 40 mile flight occurred on 8-16-11. (posted at doc library)
- 2011 LiDAR topography flight is scheduled for December 2011 to support an updated digital terrain model of the 40 mile project reach.
- GMA is finishing up sonar river surveys to get topographic data in the deeper pools.
- DWR just finished surveying all constructed side channels and alcoves at channel rehab sites.

Scope of Work
Appraisal Study
Lewiston Reservoir Cold Water Transmission[1]

Introduction

The Trinity River Restoration Program seeks an Appraisal level study from Reclamation's Mid Pacific Region Planning Division (MP-700) for means to improve cold-water transmission through Reclamation's Lewiston Reservoir.

The goal of the Lewiston Reservoir Cold Water Transmission appraisal study is to either substantiate the need for and receive authorization to proceed with a feasibility study, or to receive approval to directly implement an alternative developed hereby using existing authorities (e.g., CVPIA § 3406(b)(1) and (b)(23) or other authorities). Any alternatives developed for the purposes of this Appraisal level study should be within the Purpose and Need Statement of the Mainstem Trinity River Fisheries Restoration Environmental Impact Statement/Report, Section 1.2.1, page 1-4, October 1999, Public Draft.

The objective of the appraisal study is to investigate structural and/or operational alternatives for improving the transmission of cold water, that is less than 50°F, through Lewiston reservoir, including changes at either the Trinity and/or Lewiston Dam facilities, or within Lewiston reservoir. The appraisal study will include review of the Klamath Basin Study, as that study may identify coordinated Klamath/Trinity River flow solutions, which might also partially address the Lewiston temperature situation.

In the near-term, the study outcome should increase the certainty of meeting down-river temperature targets. Another outcome of the study will be potential means for increasing our ability to adapt to climate change impacts on the cold-water yield to Trinity reservoir from the watershed.

Study Structure

MP-700 will develop alternatives aimed at improving the transmission of cold water discharged out of Trinity Dam through Lewiston Reservoir and into the Trinity River. Some concepts are presented in the following sections.

The order of alternative development is as follows:

1. MP-700 – Clarify concepts with TRRP and partners
2. MP-700 – Develop draft alternatives, including 1-2 page descriptions for review by TRRP
3. TRRP & Partners (Temperature Work Group and others) review and comment on draft alternatives
4. MP-700 – Revise alternatives based on comments
5. MP-700 – Repeat (3) until TRRP accepts alternatives for analysis

[1] Originally produced by Fred Holz, MP-700. Modified by Rod Wittler, NC-156.

   a. MP-700 – Describe final alternatives in 3-5 page summaries (each alternative should have a 3-5 page summary)
6. MP-700 – Analyze alternatives for:
   a. Effectiveness –projection of reduced summertime and early fall temperatures of waters delivered to the Trinity River downstream of Lewiston Dam[2]
   b. Constructed features
   c. Operational changes
   d. Potential Impacts, positive and negative
   e. Initial Cost Estimate for implementing the alternative
7. TRRP – Review and comment on alternative analyses
8. MP-700 – Revise analyses based on comments. TRRP may fund additional analyses beyond those described herein and agreed to in the associated Project Management Plan (PMP)
9. Repeat (7) until TRRP accepts Report of Analyses in a final Appraisal Study report

Background

On September 7 and 8, 2010, Trinity River Restoration Program (TRRP) met with the Bureau of Reclamation, Mid-Pacific Planning Division (MP-700). TRRP initially requested that MP-700 perform a feasibility-level study of alternatives to manage the transmission of cold water out of Trinity reservoir through Lewiston Reservoir, and into the Trinity River. The group agreed on an appraisal-level study, given the need for congressional authorization for a feasibility study.

The 1955 Trinity River Act (Act) authorized the construction of the Trinity River Division and the transfer of the majority of the Trinity River flows to the Central Valley Project (CVP). Decades of low flow resulted in:

- Encroached riparian vegetation and fine sediment in upper 40 miles.
- Reduced access to floodplain.
- Loss of critical habitat.
- Major decline of anadromous fisheries starting in the late 1970's.

In 1992, the Central Valley Project Improvement Act established a minimum annual Trinity River flow of 340,000 Acre Feet (AF). The December 2000 Record of Decision (ROD) stipulated permanent flow volumes for discharge to the Trinity River that on a long-term average amount to roughly fifty percent of the inflow to Trinity Reservoir. In 2005, the first ROD flows unconstrained by litigation were released, and the first channel rehabilitation project was completed.

The TRRP goal is to restore the river fisheries to pre-project populations under a ROD-specified flow regime. The ROD outlines a plan for recovery of the Trinity River and its fish and wildlife populations with 47 channel rehabilitation projects, which are being designed for flow releases specified for each of the five water year types—critically dry, dry, normal, wet, and extremely wet. The rehabilitation projects include construction of benches corresponding

[2] In conjunction with modelers from TRRP, CVO, and USFWS-AFO

to these various flow regimes. Projects emphasize forced meanders and side channels. Riparian vegetation removed during project construction is being replanted in order to re-establish necessary shaded riparian habitat.

Specific management techniques to be utilized within the Trinity River concern sediment, temperature, and salmonid habitat. Sediment management will involve placing 10,000 tons of gravel per year, mimicking natural sedimentation impeded by Trinity and Lewiston Dams.

Issues Driving Temperature Analysis

TRRP staff described that the particular geometry, hydrodynamics, and incidence of direct solar radiation in Lewiston Reservoir causes a significant increase in water temperature during the transmission of flow from Trinity Dam to flows discharged from the Lewiston Dam into the Trinity River. Reclamation's Central Valley Operations (CVO) office operates to meet temperature objectives listed in their water rights permit (WR90-5), the Basin Plan, and the Trinity EIS. Table 1 lists the compliance points, the temperature target, and the time of year for which the target applies during the different types of water years.

Table 1. Trinity River Temperature Targets by Reach and Date

Source	Target Reach	Dates	Target
Basin Plan for the North Coast Region (Regional Water Quality Control Board) WR 90-5	 Lewiston to Douglas City Lewiston to Douglas City Lewiston to North Fork	***All Years*** July 1–September 15 September 15–30 October 1–December 31	 ≤60 °F ≤56 °F ≤56 °F
Springtime Objectives of the Record of Decision for the Trinity River EIS/EIR (USFWS et al. 2000)	Lewiston to Weitchpec	***Normal & Wetter Water Years*** April 15–May 22 May 23–June 4 June 5–July 9 ***Dry & Critically Dry Water Years*** April 15–May 22 May 23–June 4 June 5–June 15	 ≤55.0 °F ≤59.0 °F ≤62.5 °F ≤59.0 °F ≤62.5 °F ≤68.0 °F

Concepts for Alternatives

Several alternative solutions will be developed around the following concepts:

- Trinity Reservoir Management
  - Reclamation (MP-700 & CVO) will perform studies to develop a multi-year plan for preserving the cold-water pool. The parties will review temperature studies conducted for the 2000 Trinity EIS. Total Trinity Reservoir storage is

2.445 MAF; The Trinity Biological Opinion requires consultation if Reclamation forecasts operating below 600 TAF. Modeling in the 2000 EIS indicated that the ability to meet summer and fall temperature targets becomes less certain at reservoir volumes below ~1 MAF. This type of planning needs to consider safety of dam concerns and flood storage requirements, and whether these might be encroached upon under certain conditions. Operation and Maintenance practices also need to be revisited. There is a temperature model for Trinity Reservoir that is sufficient for the purposes of this study to reasonably simulate reservoir temperatures.

- Trinity Reservoir release requirements are currently exclusively based on inflow conditions that are determined based on a specific date. Neither existing soil moisture conditions, nor Trinity storage levels are currently taken into account in determining discharge requirements. A probabilistic decision-making component might be an additional factor in deciding the level of discharges from Trinity Dam.

➢ Lewiston Reservoir Management

- The current key to controlling release temperatures from Lewiston Reservoir is to decrease residence time of water within the reservoir. The current method to accomplish this is by diverting more water to the Sacramento River via the Carr Tunnel.
- One option for controlling temperatures would be to perform in-reservoir dredging. Modified reservoir bathymetry may facilitate cold-water plunging and decreased residence time in the reservoir. A CE-Qual-W2 model of Lewiston Reservoir is under development. This model will be used to provide guidance for possible dredging operations.
- Another concept is to drop reservoir levels in the summer to create more of a riverine, rather than reservoir, condition. This would impact recreation and may not be acceptable to the local community.

➢ Coordinated Trinity/Klamath Operations

- It is uncertain whether this alternative could improve the temperature regime below Lewiston; however, it will be studied under the Klamath Basin Study with a primary goal of better flow management. TRPP staff indicated that the RMA-11 model for the Trinity River is theoretically compatible with the RMA-11 model on the Klamath. However, they have never been run in a coordinated manner.

➢ Physical Modification of Lewiston Reservoir and/or Dam

- The construction of a pipeline from Trinity Power Plant to the Lewiston Dam has been proposed to divert the flows to be discharged to the Trinity River directly below Lewiston Dam. This could be accompanied by a pipeline to the Judge Francis Carr diversion, which would open up a pump-back or pump-storage possibilities.
- The construction of a 450 cubic feet per second pipeline buried in the bottom of the channel may also address the issue.
- Another possible solution is the enlargement of the small power plant at Lewiston, which might provide temperature control benefits.

- The complete removal of the Lewiston Dam is not an option. That would require major changes to hatchery operations, probably would not be acceptable to the local community, and does not fall within the Needs and Purpose of the Trinity EIS.

Analyses of Alternatives

<Need an introduction outlining the analyses MP-700 is proposing to conduct. They need to complete this section.>

- Investigate functioning of existing Lewiston temperature control devices. Could they be improved?
- The status of Trinity County Public Utility District's power plant needs to be investigated and its viability to provide temperature control. Trinity County Public Utility District (PUD) is actively working on a plan to enlarge the existing 250 kilowatt power plant. The new plant will be capable of utilizing the entire Trinity River flow, at least under normal runoff conditions. Their plan involves constructing additional penstock(s) over the dam. The PUD has apparently investigated alternative designs, specifically addressing temperature control within this improvement, but decided it would not solve the temperature problem, especially in light of the failure of the existing temperature control curtain to adequately control temperatures.
- <Others?>

Modeling Assumptions

Both temperature and flow modeling would likely be needed to fully explore and add definition to the alternatives, allowing for effective evaluation of costs and possible benefits associated with some or all of the alternatives.

Impacts Evaluation

MP-700 & TRRP staff will need to work with TRRP Partners to develop criteria or parameters that describe the efficacy of cold-water transmission through Lewiston Reservoir. These measures will form the basis of comparing and rating the various alternatives.

This complex situation will require a collaborative effort and integration of community, biological, and ecological needs, constraints and benefits.

MP-700 Budget

FY12 - $150,000 (Approved by the Trinity Management Council)

Funding

MP-700 initially estimated $100,000 to $200,000 based on developing an appraisal study using existing information (i.e., flow and temperature modeling using currently available models). However, if the study needs to include original modeling, as well as detailed benefit and cost evaluations, this would increase the cost of the study.

Cost Estimates and Schedule

MP-700 will coordinate with MP-200, TRRP, and the Reclamation Technical Service Center to determine which organization has the expertise and time to perform the studies to estimate costs associated with each alternative.

<MP-700 should provide more detail of the budget once this Scope crystallizes>

2012 TRINITY RIVER POTABLE WATER AND SEWAGE DISPOSAL SYSTEM ASSISTANCE PROGRAM

In preparation of the spring 2006 spring fishery flow release, bridges were raised, roads were raised, structures were relocated (pump houses, decks, etc.) and a house was purchased and relocated out of the Trinity River floodplain. The floodplain was essentially ready for the second highest release (10,100 cfs) from Lewiston Dam since it was completed in 1963.

During and after the peak flow release on May 23, 2006, the Trinity River Restoration Program (TRRP) received more than a dozen phone calls from landowners who had lost their potable water systems due to the high flows. After discussion with the Department of the Interior Solicitor's Office, it was determined that lack of water is a life, health and safety issue, and that the TRRP was authorized to reimburse landowners for the least cost fix to their potable water systems.

This was the impetus for development of the Trinity River Potable Water and Sewage Disposal System Assistance Program (well grant program). The idea behind the well grant program was that landowners would likely continue to have issues related to their potable water systems attributable to high spring flow events, and potentially to their septic systems and leach fields, but not all landowners would be impacted.

In September 2006, letters were sent to 422 Trinity River landowners informing them that 11,000 cfs releases from Lewiston Dam would be implemented in the future during extremely wet water years. The letter also informed landowners about the new well grant program and included instructions for applying to the program. Several notices were subsequently published in the Trinity Journal. Grants up to $5,000 were made available for septic systems and up to $10,000 for potable water systems.

During 2004 and 2005, an inventory of 224 water systems was documented in the upper 40 miles of river below Lewiston Dam. To qualify for reimbursement, landowners were required to obtain all required permits (e.g. CA Dept. of Fish and Game 1601 permit) and affirm legal rights to divert water. This proved to be a time consuming process and only 20 of the 224 landowners completed the process of relocating, replacing, modifying or otherwise improving their potable water and/or sewage disposal systems during the first fiscal year (FY 2007). However, word quickly spread and 44 additional systems were addressed during FY 2008.

The well grant program was a three year program slated to end September 30, 2009. By the end of FY 2009, 122 landowners were assisted at a cost of $1.14 million. Under special circumstances, three additional landowners were assisted bringing the total to 125 landowners assisted at a total cost of $1.17 million. Several landowners came to the TRRP asking for financial assistance after the well grant program closed citing a myriad of reasons why they did not apply during the three year grant period. These landowners have been placed on a waiting list.

The well grant program is one of the few mitigation efforts that the TRRP can globally provide along upper 40 miles of river. It is beneficial to life, health and safety of riverfront landowners, and in return, the TRRP receives a permanent waiver of liability against future impacts to potable water and sewage disposal systems. The majority of the work completed under the well grant program was performed by

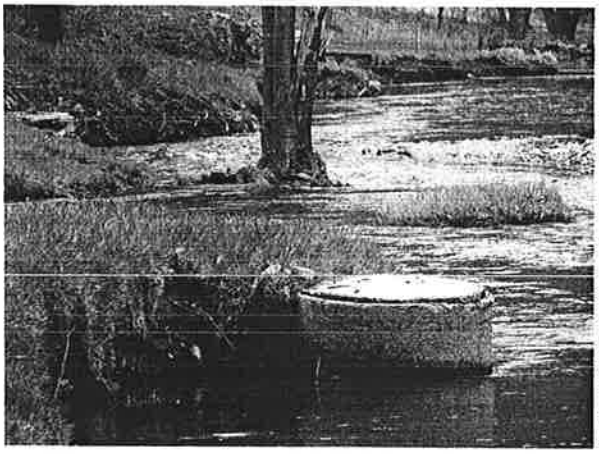
local contractors infusing $1.17 million dollars into the local economy over an approximate three-year period.

The well grant program will be reinstituted as of January 1, 2012. The purpose is to provide those landowners who have been (since September 2009) or who may be impacted by high spring flows the opportunity to apply for the program. The original well grant program parameters will apply including the requirement that the system was constructed prior to January 1, 2005, and that the system was operational between January 1, 2005 and December 31, 2005. The maximum reimbursable amount will remain at $10,000 per potable water system per improved parcel of land and $5,000 for a sewage disposal system.

Reinstituting the well grant program will: allow for public outreach; show that the TRRP is a good neighbor and supports the local communities; will stimulate the local economy; and provide additional permanent waivers of liability for impacts to potable water and sewage disposal systems. The program will be run solely out of the TRRP office and will be on a first come, first-served basis.

There are approximately 100 systems remaining of the 224 inventoried. It is anticipated that only 50-60% will apply for the program. The anticipated budget for this effort is $150,000 for 2012 (which will include those on the waiting list) and $100,000 in subsequent years. It is anticipated that not all wells will be negatively impacted by the flows, and that the need for grant funds will diminish over time with budget amounts reduced accordingly.

Announcements regarding the well grant program will be published in the Trinity Journal and 1st quarter 2012 *Conservation Almanac*. Letters will be sent to approximately 500 riverfront landowners informing them of the well grant program requirements for eligibility and qualification. The over-mailing will ensure that no landowner is unintentionally excluded from notification.



Trinity River Restoration Program: Sampling design workshop

Date
Nov 15-16th, 2011

Location
Weaverville TRRP office
1313 South Main Street, Weaverville, California

Amanda Waterlaw

Workshop Objectives:

1) Re-evaluate the current 'GRTS' approach
    - Determine how well the current approach is working for different assessments.
    - Identify what isn't working (e.g., missing important sites for riparian, sampling units too small for some process based questions, too big for others)
    - Identify specific action items to address design flaws.

2) Development of a revisit design for rehab sites, integrating the various disciplines
    - Understand the information needs of the design team (short term feedback).
    - Collaboratively work through the design details for different rehab scale assessments. Develop a draft revisit design for rehab sites describing how sites are selected and how frequently they should be revisited.
    - Identify specific action items required to refine and finalize the design.

Nov 15, 2011

Review of current GRTS approach for system scale questions	
10:00-10:10	Introductions, review of agenda, workshop principles (Darcy)
10:10-11:00	Status update from each group (physical, riparian/wildlife, fish) (10 min each + 5 min each for questions) • Short presentation identifying what system scale questions/assessments are currently being monitored and with what approach • System scale using GRTS – quick answer is it working or not? • If not are they doing something else
11:00-11:15 coffee break	
11:15-11:45	Where it is working are refinements required? • Brainstorm/list these (e.g., power analyses, sample size calculations) this can form the basis for requests that go to FWS biometrician or become work tasks down the road
11:45-12:30	Where it isn't working, identify the problem(s) • What isn't working (e.g., missing important sites for riparian, not big enough units for some process based questions?) • How can we do better for questions at different spatial scales?
12:30-1:30 Lunch on your own	
1:30-3:00	Initial brainstorming about each of the problem(s) • Do we need a single 'silver bullet' design or can we have several designs for different questions at different scales? If multiple designs are used how can we integrate these across scales and disciplines? • What alternative approaches may be suitable?
3:00-3:15 coffee break	
3:15-4:30	Continue working on plan for resolving each problem identified above. Identify action items moving forward and appropriate contacts.
5:00 Adjourn for the day Group dinner Location / time to be determined	

Nick Soave
John Bair
Nina Hemphill
Eric Peterson

KBO - Ian Ospey / John
Damon Goodman USFWS
Aaron Kinter

Nov 16, 2011

Re-visit design for rehabilitation sites	
9:00-9:10	Review of Agenda (Darcy)
9:10-9:20	Setting the stage (DJ - 10 minutes) • Provide a brief review of the number of rehab sites completed to date and how many are left to come. • Review the timeframe for completed sites and the planned schedule for the remaining sites.
9:20-9:40	Review feedback from the Design Team, what information do they need from us? (Ernie/DJ – 15 min+5 for questions)
9:40-9:50	Review of task process (Darcy 10 min)
9:50 – 10:30	Introduce a possible template for the re-visit design (Aaron – 15 minutes) Question/Discussion period (20 minutes)
10:30-10:45 coffee break	
10:45-12:30	*Briefly* describe the information needs for rehab scale questions for each team: Design, Physical, Riparian, Wildlife, Fish, and Fish Habitat. (Break into small groups) • Identify the Big Question • IAP Assessment • Data needs/performance measures • Does an adequate protocol exist? • Do quantitative targets exist? • What are the expected outputs and corresponding analyses? At what temporal and spatial scale do we need to collect data for each assessment? Spatial Scale: • Is a census possible, (i.e., the assessment can be evaluated using aerial photography) • How is a rehab site defined? Is it an individual feature or a group of features working together? Which scale is relevant to each assessment (i.e., feature or site)? • Is this assessment also contributing to the system scale questions? Temporal Scale: • What is the expected response time? Is it linked to an event (e.g., flow of certain size) or to a seasonal timescale? • Describe the expected annual variability (high, low, or linked to specific events). This will help to determine whether we need data collected annually, periodically, or in response to some event.

12:30-1:30 Lunch on your own	
1:30-3:00	Update the proposed re-visit design based on information summarized in the morning. • Group assessments across teams by spatial and temporal scale • Identify obvious challenges Provide an initial response to the following questions: • How many sites should we sample in a year? • Which sites should be selected and how? • How frequently should sites be revisited? • What general re-visit structure should we use? • Should we incorporate event based triggers and if so for which assessments? • Should the different disciplines be integrated for rehab scale monitoring? • How can this monitoring be integrated with the system scale monitoring?
3:00-3:15 coffee break	
3:15-4:30	Identify information gaps and specific action items required to move from draft re-visit design to final[1] re-visit design.
4:30 Adjourn for the day	

[1] Final does not imply that it will never change but that it is ready to implement. As with all components of the TRRP adaptive management program the re-visit design should be reviewed periodically and adjusted as necessary.

Trinity River Restoration Program – The Big Questions

Introduction

Collaborative, large-scale, and long-term natural resource projects face many challenges to implementation. Technical complexities, budget and logistical constraints, and competing objectives all make it difficult to effectively implement adaptive environmental assessment and management (AEAM). It is easy to become caught up in the technical details of smaller, more tangible tasks whereas it is difficult to make decisions in relation to broader scale tasks that may involve interaction across a variety of components and have larger implications on the program as a whole. A guidance strategy that has been found useful by a variety of programs is the creation of a short list of key questions or decisions (e.g., EPA Data Quality Objectives approach (US EPA, 2000), Skaha Lake re-introduction 'Big Questions' (Alexander and Pickard, 2009), and the 'Platte River Implementation Program 'Big Questions' (Smith et al. 2011)) which help to focus the direction of the program.

A short list of Big Questions for the Trinity River Restoration Program (referred to hereafter as the Program) should improve focus and guide all aspects of the overall AEAM Program including: design, implementation, monitoring, synthesis, data management, and communication. The questions are a reminder of the big picture, (i.e., what is the point of the Program) which can often be forgotten when dealing with technical details. If used to guide all technical working groups, these questions provide a common focus that will facilitate integration among teams. This approach forces managers to think about how data will be used before they are collected, rather than asking what questions can be answered after collection. They provide a useful framework for Program reports thereby improving the ability to communicate complex scientific hypotheses, analyses, and results across technical teams and to the Trinity Management Council (TMC), Trinity Adaptive Management Working Group (TAMWG), decision-makers and public. The Big Questions do not replace any of the existing work done by the Program. Rather, they provide an overall umbrella under which all aspects of the Program operate and report.

This report describes the approach used to generate Big Questions for the Program, proposes a short list of Big Questions, and suggests how the these questions can be used to provide a comprehensive, yet easily understood overview of the Program.

Approach

The questions should relate directly back to management decisions so as to catalyze adaptive management information feedback loops. They should be seen as an integrated set of questions and not taken independently. They should be flexible enough to allow for the evolution of greater specificity of objectives. They should be broad enough to characterize and unify all aspects of the Program. They should not simply be a bottom up aggregation of the Integrated Assessment Plan (IAP, 2009) assessments. The questions should be straightforward, using plain language to communicate the central questions of the Program.

Stepping back and reflecting on the primary goals and uncertainties of the Program led us to propose two categories of Big Questions. First, a short set of questions derived directly from the Record of Decision (2000) as well as the more recent Master Final Environmental Impact Report (FEIR) (North Coast Regional Water Quality Control Board and U.S. Bureau of Reclamation 2009). These long term questions are focused on the scale of the 'Program as a whole'. Questions at this scale are essentially 'permanent' (within the world of the Program) as they will remain consistently relevant over time. While still incorporated into the AEAM framework, these questions may require evaluation over long time scales (e.g. 20 to 30 years).

The second category of questions, are evaluated on a shorter time-scale. These are focused on high priority current uncertainties, and should have an associated management action. These short term questions are meant to motivate a frequent evaluation of critical management uncertainties, leading to an adjustment of future actions. This should involve a comparison of observed outcomes from current management actions, to predict responses and develop specific objectives for future actions. Such questions are considered 'temporary' (within the world of the Program) as they are expected to be asked and answered within defined, relatively short time frames (annual to 5 years).

BIG QUESTIONS

The "Big Questions" (Table 1) identify critical uncertainties that are at the heart of the Program's need for AEAM implementation and should form the basis for testing of Program management strategies. Program actions should be directed toward answering these "Big Questions". The Big Questions were not organized by priority, but by temporal sequence and/or discipline. For example, fish habitat is mentioned before fish production because it is hypothesized that fish habitat must be restored before the fisheries objectives can be met.

TABLE 1. THE PROGRAM'S "BIG QUESTIONS"

Long term questions (Spatial Scale: upper 40 miles[1]; Temporal Scale: 20 to 30 years)
1. Are Program actions rehabilitating the river itself, restoring the attributes that produce a healthy alluvial river system?
2. Are Program actions on track to produce a sufficient area of suitable salmonid rearing, spawning, and adult holding habitat to meet Program objectives?
3. Are Program actions increasing natural production of healthy juvenile salmon and steelhead, and on track to meet Program objectives for natural smolt outmigrants, escapement, and harvest?
4. Are Program actions sustaining or enhancing the riparian community structure including: vegetation, fish, and wildlife?
5. To what extent do in-basin and out-of basin factors beyond Program control (e.g., extreme climatic events, hatchery practices, lower Klamath conditions, marine survival) influence the system's response to Program actions?
Short term questions (Spatial Scale: variable; Temporal Scale: annual to 5 years)
6. Which channel rehabilitation actions are most effective at creating and maintaining fish habitat?
7. Are flow and sediment actions meeting annual objectives for each water year? a. Are flows and volume of coarse sediment augmentation sufficient to create and maintain fish habitat? b. Are flows creating conditions necessary for fish survival across all life

[1] With the exception of Big Question 5, where the spatial scale encompasses the entire life-history.

stages (e.g. temp, velocity, depth)? c. Is fine and coarse sediment effectively routed through the system?
8. Are watershed restoration actions and sediment pond management effectively reducing fine sediment introduction to the Trinity River?
9. 9. How are Program actions impacting wildlife populations within the Program area?
10. Is the Program effectively implementing results driven adaptive management to fulfill the Adaptive Environmental Assessment and Management (AEAM) vision of the TRRP?

Long Term Questions

1. **Are Program actions rehabilitating the river itself, restoring the attributes that produce a healthy alluvial river system?**

   Program management actions (i.e., flows, sediment management, watershed restoration, and mechanical actions) are intended to increase fluvial geomorphic processes to prevent detrimental riparian encroachment and increase the topographic and structural complexity of the river channel through time (e.g., IAP Objectives 1 and 5). Together, these management action outcomes are expected to increase and maintain high quality fish and wildlife habitat. This question is focused on alluvial processes while Questions 2-4 are outcome focused.

2. **Are Program actions on track to produce a sufficient area of suitable salmonid rearing, spawning, and adult holding habitat to meet Program objectives?**

   The current quantity and quality of available habitat within the upper 40 miles is thought to limit natural production. Program actions are intended to restore the aquatic habitat conditions necessary to meet natural production objectives for salmonids (e.g., IAP Objective 2). Rearing habitat was identified as the critical bottleneck at the time of the Trinity River Flow Evaluation Study (TRFES, 1999) and therefore is the priority focus for rehabilitation. However, as the river restoration progresses other habitat needs could potentially become limiting.

3. **Are Program actions increasing natural production of healthy juvenile salmon and steelhead, and on track to meet Program objectives for natural smolt outmigrants, escapement, and harvest?**

   The cumulative effects of Program actions are intended to result in improved spawning, incubation and emergence success, as well as increased growth rates, size at age and juvenile production of salmonid populations (e.g. IAP Objective 3). Increased natural production will be necessary to achieve both Program adult escapement targets and the desired restoration of harvest opportunities to affected tribal and non-tribal fisheries (e.g., IAP Objective 4).

4. **Are Program actions sustaining or enhancing the riparian community structure including: vegetation, fish, and wildlife?**

   Combined Program actions are intended to promote patchy, diverse, heterogeneous riparian vegetation throughout the river corridor on constructed and naturally created floodplains while reducing detrimental riparian encroachment. This should provide useable habitat for riparian and aquatic birds, and other wildlife species (e.g., IAP Objective 5). Enhanced aquatic and riparian habitat complexity is expected to benefit wildlife species, maintaining (or even increasing) population abundances and (for riparian and aquatic birds) species diversity (e.g. IAP Objective 6). Additionally, healthy floodplain forests are part of the restoration strategy that will influence channel morphology, provide nutrients to the river, cover for fish, cool air and water temperatures, providing desirable water temperature variability (off-channel habitats, alcoves, etc.) and ultimately benefit all riverine and riparian dependent organisms.

5. **To what extent do in-basin and out-of basin factors beyond Program control (e.g., extreme climatic events, hatchery operations, lower Klamath conditions, marine survival) influence the system's response to Program actions?**

   There are many in-basin and out-of-basin factors that are outside the direct control of the Program that could affect habitat responses or negatively influence the productivity of Trinity River native fish or

wildlife populations. While the Program may not be able to manipulate these factors, they must be considered during analysis and interpretation of results to ensure that effects resulting from Program actions are not obscured by other limiting factors.

Short Term Questions

6. **Which channel rehabilitation actions are most effective at creating and maintaining fish habitat?**

   Channel rehabilitation projects should be regularly assessed to evaluate the relative success and combined effects of the different design elements (e.g., alcoves, berm notches, side channels, high flow scour channels, flattened tailings, terraces etc.) and the overall rehabilitation site design in creating and maintaining fish habitat. Such evaluations are critical for informing design decisions around yet to be constructed rehabilitation sites, or for reconsidering existing design features of rehabilitation projects that have already been implemented.

7. **Are flow and sediment actions meeting annual objectives for each water year?**
   a. **Are flows and volume of coarse sediment augmentation sufficient to create and maintain fish habitat?**
   b. **Are flows creating conditions necessary for fish survival across all life stages (e.g. temp, velocity, depth)?**
   c. **Is fine and coarse sediment effectively routed through the system?**

   Regular evaluation of scheduled flows and coarse sediment augmentation is required to assess whether the combination of recommended flows and sediment augmentation is achieving its full range of intended functions (e.g., in high flow water years scour and mobilize the channel bed, transport coarse and fine sediment through the mainstem, maintain/expand created habitat at channel rehabilitation sites, initiate bank erosion in other areas of the river, etc.; in all water years provide seasonal flows and habitat that can sustain all life stages of fish and wildlife populations).

8. **Are watershed restoration actions and sediment pond management effectively reducing fine sediment introduction to the Trinity River?**

   Reducing fine sediment in the Trinity River is expected to improve the survival and development of salmonid eggs. Sediment ponds are used to trap fine sediment from tributaries preventing it from entering the Trinity River. Upslope watershed restoration projects (e.g., road decommissioning) throughout the basin are expected to reduce the source of fine sediment.

9. **How are Program actions impacting wildlife populations within the Program area?**

   Program actions (i.e., flow, sediment management, rehabilitation site construction, or watershed management) are expected to have long-term beneficial impacts on wildlife populations, however there may be short-term detrimental impacts which need to be mitigated to ensure the benefits are realized.

10. **Is the Program effectively implementing results driven adaptive management to fulfill the Adaptive Environmental Assessment and Management (AEAM) vision of the TRRP?**

    AEAM is a core component of the Program strategy. Adaptive Management principles should be incorporated into all facets of the Program at all scales (e.g., setting targets, evaluating management actions, and the Program as a whole). Is the Program implementing each of the components of an AEAM Program adequately?

    The components of an AEAM Program:

    - Define measureable goals and objectives;
    - Document/evaluate baseline conditions with respect to goals and objectives;
    - Develop testable hypotheses of how to achieve goals and objectives through management actions;
    - Predict river response to management actions before implementing management actions;
    - Implement, monitor, and evaluate management actions;

- Re-evaluate objectives, refine hypotheses, improve models, and improve management;
- Continually self-examine AEAM science and management via external peer review.

Recommended Next steps

While the Big Questions are intended to provide overall focus for management actions, they are insufficient on their own to inform decisions about the allocation of Program resources for monitoring. Several important steps should be incorporated into future planning and investigation plans.

1. **Identify which Big Question is being addressed and how the activity will contribute to a better understanding of how river function has improved.**

2. **Identify specific uncertainties within the Big Question and describe how reducing these will help to answer the Big Question**

3. **Identify and describe the data needs to address this uncertainty**

4. **Define quantitative targets for the question**
   Targets are a necessary part of an AEAM framework. Without clear targets, it is impossible to determine the monitoring effort required to evaluate each of the Big Questions. Targets imply the spatial and temporal scale at which monitoring needs to occur and the level of effort or precision required. The targets themselves may require periodic testing and re-evaluation.

5. **Quantitatively describe the spatial / temporal bounds of the problem including the expected response time**
   This information is critical to informing the spatial and temporal scale of the monitoring design which has significant implications for the allocation of effort. How frequently should monitoring occur? At what scale should data be collected (e.g., rehabilitation sites or system-wide)?

6. **Document and quantify the precision necessary to adequately answer the question or uncertainty**

   How well do you need to answer the question? This depends on the target or scale of the effect you would like to be able to detect. Generally speaking it takes less effort to be able to identify a big change. However, for some of the shorter term questions that attempt to address uncertainties in the management actions, it may be important to be able to detect smaller changes to ensure the Program is tracking in the right direction.

7. **Integration of assessments**

   Identify important linkages among assessments and be aware that in some cases an 'orphaned' assessment may provide little or no value as a stand-alone evaluation, although when paired with several others it is very useful. Funding decisions should acknowledge these relationships.

8. **Describe the expected outputs and corresponding analyses**

   What would you do with the data if you had it? This is a useful exercise to ensure that all the necessary data are collected to complete the analyses and that none of the data are unnecessary. This is also useful to ensure that the outputs resulting from the monitoring will actually help to answer the Big Question. Because a particular dataset has always been collected is not a sufficient justification for it to continue to be collected.

9. **What are the implications of different outcomes?**

   What would you do differently if you reduced this uncertainty? Would you adjust a management action (e.g., flow, sediment, or rehabilitation site construction)? Would you revise your sampling design (e.g., spatial scale, frequency, or intensity)? Would you revise your targets? Would you revise your performance measures or analytical approaches?

10. **Synthesis report**

    It is recommended that the Program's annual report include: 1) a summary of what was done in the current year; 2) a summary of

performance measures (current year and historical); and 3) a synthesis section which describes how the results of all of the individual activities and assessments come together to tell a story about the Big Questions.

The recommended next steps are derived both from experiences in the Trinity River Restoration Program and with many other large complex monitoring projects. The process of addressing these steps will provide sufficient detail to decide on the appropriate allocation of resources. In other words, how much effort will it take to answer the question, at the right spatial and temporal scale, with sufficient precision? While all of these steps are important, in many cases they won't all be able to be addressed immediately. When a step can't be addressed immediately (e.g., due to a lack of quantitative targets), it then becomes the focus of the current investigation plan. For many assessments the IAP already addresses steps 3, 5, & 7 however in most cases steps 4, 6, & 8-10 have not yet been formally incorporated.

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Sent by David Steinhauser to TAMWG members 11/10/2011

Public Safety and Large Woody Debris

Introduction I attended the public information meeting on Large Woody Debris (LWD) on October 20. I was pleased and surprised at the quality of the meeting, bringing in presenters with established professional credibility, presenters from other river systems where LWD is being successfully use, and a striking historical overview which documented the often lost presence of LWD, and its power to establish new meanders. The advantages to fish restoration were quite compelling. Public safety to recreational users was discussed during the question-answer portion of the meeting with questions from a person who regularly boats the Trinity River and instructs people on river safety. I was less satisfied with the response to those questions of responsibility and providing for public safety. I would like to consider Public Safety in relation to the TRRP and LWD further, not to derail the use of LWD by the program, but to ensure safety and to keep the Program's use of LWD from being derailed by accidents and excessive risk. It is unfortunate that one of the most productive restoration actions is also one of the most dangerous.

TRRP Contribution to LWD Placing and recruiting Large Woody Debris has become an active part of TRRP river restoration. In a certain sense the Program has taken ownership of LWD. LWD is used by the program to provide productive habitat, cover and shade, to encourage scouring in certain areas, and to enhance the scour-deposition cycle of a naturally behaving alluvial river. In the last couple of years large engineered log jams (ELJ) have been constructed and more visible in restoration sites. During the informational meeting it was stated that around 2,000 pieces of LWD have been placed into the river by the Program. With the 11k flows of 2011 a lot of wood moved down the river. The expert crew of Dana, myself and Neal OHaire rafted from Indian Creek to Pigeon Point on the first day of the 11k release. Helical flows bouncing off the sides drew a literally continuous line of woody debris, mostly small, into more or less the center of the river. We took a break above Junction City and Neal counted a large piece of wood floating by every 3 seconds ,and a "friggin huge log" every 5-10 seconds. This movement of wood was expected with the flows. Although most of the wood washed away, or was deposited outside of the normal riverbed there was a noticeable increase in trapped and deposited wood as the water receded. If I am not mistaken, another contribution of LWD by the TRRP is the intentional dying off of Alders in certain areas adding to the potential for more dead trees in the system.

Risk = Probability of Occurrence X Consequence The increased movement and deposition of wood was accompanied by some scenarios that draw attention to the potential risks of LWD to recreational river users. One of the presenters at the informational meeting gave the formula (or something very close to this) Risk = Probability of Occurrence X Consequence. This summer there were two close calls, near drownings, in the Trinity River with boaters caught on LWD. LWD, especially in a channel where one might be boating or swimming, are called strainers because they can catch or strain the person or craft while allowing water to flow through and put pressure to pin the person or boat against the log(s). One, which I wrote about in the Trinity Journal

(http://www.trinityjournal.com/news/2011-08-10/Outdoors/River_rescue_saves_a_life.html), occurred about a mile downstream of the North Fork when a well-equipped, but possibly inexperienced inflatable kayaker flipped and washed into a log which had been caught on rocks during the higher water releases. Only the victims head and hands were above water as he was caught on the log, and it was probably only by fortunate timing that he was rescued by USFS River Rangers and guides trained in the use of ropes. Less than couple of weeks later a kayaker, not wearing a life jacket, was caught when his kayak wrapped around on a log upstream from Junction City. For 30 minutes he held his head above water by holding onto a branch before help arrived. The exhausted man was rescued by the Junction City Volunteer Fire Department with assistance from Search and Rescue. The VFD Chief was able to swim, with fins, across the currents, and stand behind the victim in chest-high current and stabilize him. Another member walked through blackberries with a chain saw to cut the log, but slipped and dropped the saw into the water. Search and Rescue arrived with a second saw and was able to complete the rescue. Both of these occurrences highlight the severe potential "Consequences" (see formula above) of getting caught in strainers. The danger of strainers is widely recognized in the boating community. The close calls also draw attention to realistic "Probability of Occurrence".

Mostly A Forgiving River The Trinity River has shown itself to be a very safe place to recreate with reasonable precautions taken. I have been actively rafting and kayaking on the Trinity River since 1988, and I do not recall of hearing of anyone drowning in the main stem Trinity with their life jacket on. I know of a drowning around 7 or 8 years ago on the lower South Fork Trinity where a rafting guide, who was recreationally boating in a sit-on-top kayak, was caught in a log jam with her life jacket on and perished. Just downstream from the approximately 40 miles of TRRP activity is the Pigeon Point Run. Nick Walker, USFS River Ranger, stated that this is arguably the second most popular stretch of river in Northern California after the South Fork American. In the past this has remained largely free of strainers. High flows are remarkably able to move logs through the Run as most rocks are covered at high flows. This year there were several trees deposited in the run although most were not cross current and thus not as dangerous as the one in the near drowning mentioned above. I have found it to be striking over the years how much more wood has remained in upper sections of the river, especially above Junction City. I have heard of anecdotal close calls, but apparently the milder gradient has allowed for reasonable safety. Further downstream, in rocky Class V Burnt Ranch Gorge a new log appeared in the main exit chute of Burnt Ranch Falls #1, also known as Jaws. Greys Falls already had a log across its main entrance.

Safety within the Legitimate Scope With more wood in the River and more potential danger, the question of responsibility by the TRRP arises. One way of looking at it is that Program management simulates characteristics of a wild river and is part of a river which has its own natural occurrences. This could imply that LWD risks are inherent in the river system and need not be aggressively managed for recreational safety. An opposing view would be that just as wild river characteristics such as increased flow require mitigation to landowners and bridges, so public safety risks to recreational users should also be mitigated. At the LWD informational meeting Program Executive Director, Robin Schrock, took the position that the USFS or BLM should be called to consider safety issues related to LWD on a case by case basis, and that it would take an act of Congress for the Program to be involved in removal of wood that may be safety hazards to recreational users. This sounds rather final, but I believe that this

statement is open to further interpretation, especially if partner relationships are included. I am confident that when Program activities affect public safety, reasonably ensuring safety is within the legitimate scope of the program.

Strainer Removal in 2011 During 2011 a number of LWD hazards were managed. The Trinity County RCD contracted an expert tree faller to remove a difficult and dangerous strainer above Junction City. The JCVFD removed another during a rescue as mentioned above. Raft guides attempted to remove the strainer that caused the near drowning on the Pigeon Point Run using 5000+lb strength rope and mechanical advantage to move the log, but were unsuccessful when the rope broke. Later, when the water lowered, a Swift Water Rescue instructor and friends, while recreationally kayaking, were able to lift the log up and free of the rocks that held it in place and it washed to the bottom of the pool below the rapid. Private parties removed several other hazards as well.

Relying on Other Agencies The chief problem with expecting other agencies and river users to manage LWD safety is that they may be underfunded. Grant funding may not always be available to the TCRCD. USFS River Rangers were given advanced Swift Water Rescue training as a result of their lead in the Pigeon Point Rescue. Funding uncertainties do not guarantee that River Ranger positions will be filled. Perhaps the TRRP should set aside funds to be available to partners such as BLM, USFS, TCRCD, DFG and private contractors for LWD Public Safety. The cost of removing dangerous strainers on a case-by-case basis would likely be minimal, possibly just a few thousand dollars or less. A better and more aggressive safety response would be to hire River Rangers whose jobs would include education and rescue as well as the evaluation and removal of hazards.

Design Considerations Safety in ELJ design can also be considered. If I am not mistaken, TRRP ELJ projects have not yet caused large log jams with expansive strainers. Their appearance, however, looks as though they are designed to capture significant LWD sometimes in the form of dangerous strainers. One of the presenters at the Informational Meeting showed an ELJ project that has a deflective design and will probably not catch strainers. Perhaps this design can be used in some future scouring situations. Another project boasted ELJs that are designed to withstand a 100 year flood. I do not know the standards of current restoration TRRP ELJ projects. Presumably many are not buried to e.g. 20 feet that may be required for 100-year-flood standard. Is this important for public safety? On the one hand, with extreme flows the currents will do a lot to wash LWD outside of the normal river channel. On the other hand, I will assert that when a log jam breaks up, it is more likely to create another log jam or strainers downstream. I have witnessed this on Canyon Creek, and it seems to be common sense. Log jams frequently include waterlogged wood which does not wash away as easily wood from above water. Cost would presumably come into consideration in how robust a design is chosen.

Geographical Scope How far should TRRP safety management extend? Should the TRRP be responsible for only the logs they place, or for other logs moving in the system? It would be hard to pin down if a log was placed by the TRRP, but easier to tell if it wasn't. If I am not mistaken, Program-placed logs have their limbs removed, and so the more dangerous and complex strainers, with limbs, are not Program-placed logs. Still, natural logs move with Program-managed flows, and Alders management is a Program activity. Thus, the program is actively engaged in LWD in more ways than active placement. If

the TRRP should choose to partner with other agencies in LWD public safety management, the question arises about whether this should extend below the North Fork. In my opinion the popularity (Probability of Occurrence) and proximity of nearby Runs such as the Pigeon Point Run make them susceptible to hazards initiated by Program LWD management and thus worthy of Public Safety assistance. As one flows past Cedar Flat into Burnt Ranch Gorge, the distance from the Program management area and also the requirement of expert boating skills make this stretch less vulnerable to Program-related Consequences.

Safety Standard What should be the safety standard? I am pleased that TRRP fishery related goals include management that includes natural river forces such as flow and LWD. I don't believe that there is a requirement to make the river safe for every 8-year-old on an inner tube. Adventures are not always chosen based on the safest path, but it is prudent to manage risks to recreation on a semi-wild River. I agree with Robin Schrock that strainer removal should be considered on a case-by-case basis. Frankly, before the accident, I might not have advised that the strainer that caused the near drowning on the Pigeon Point Run be removed, because, even though it went across the current in a significant portion of the river, the standard route of rafters and kayakers is to go to the right of where the strainer was located. The close calls this summer were a heads up to me, and I think that they should be to the TRRP as well. It would be tragic if a drowning occurred at a restoration site or on a run below the North Fork. It would be frustrating if a difficult-to-remove root wad got trapped in Hell Hole Rapid with no resources to remove it.

Public Discussion at TAMWG Meeting I do not know the extent to which Public Safety has been considered by TRRP staff in the LWD aspect of the program. I am also unfamiliar the effects of LWD on other users was presumably treated in NEPA, CEQA and other official documents. From what I have seen, the public discussion could be expanded. I believe that it is a legitimate stakeholder topic, and request that it be considered at the next TAMWG meeting.

David Steinhauser

Addendum to "Public Safety and Large Woody Debris"

The **important points** which are likely to be agreed on are:

- LWD helps the fish and is important.
- LWD is a significant Public Safety Risk, and the risk increases as more LWD is introduced to the River.
- Actions must be taken to maximize Public Safety.

Actions should include:

- Safety Education
- Availability of trained rescuers
- Hazard removal or control
- Design considerations such as deflective ELJ, and logjam size and placement management with Public Safety in mind.
- No large log jams close to the Pigeon Point Run which is immediately below the project range, and which has more demanding whitewater and heavier summertime usage.

Public Safety is Economic Safety True for Trinity County businesses, and it would seem for the TRRP too.

Trapped LWD absent in Wheel Gulch Environmental Review Public Safety was considered in Environmental Review Documents related to projects including Wheel Gulch, but it did not consider wood that was intended to be trapped by the design. Is this because it is Naturally Occurring, or because the issue was not brought to the attention of the document authors?

Counterintuitive Logic of Natural Occurrence Woody debris is currently treated by TRRP, USFS, and BLM as naturally occurring. This seems counterintuitive when one looks at a constructed project that is clearly designed to catch wood. The upper river and tributaries above Lewiston Dam is now unavailable to fish. In this context the recruitment of wood, which is a natural asset for fish, makes the trapped wood natural in the section of river that the fish can currently access. With this view, the Program is managing the river to have natural characteristics, and there is no public-safety responsibility for naturally occurring wood. By analogy, another natural feature is cool water that spring-run fish can survive in during the hot summer. If one looks at the history of water temperatures at, e.g. Junction City, they were much warmer in July and August before the dam than they are now, but it is natural for fish, that can no longer get into the upper tributaries, to have water at a temperature that they can survive in. Nevertheless, even if wood is natural, especially from the fishery point of view, it is increasing in and near Project areas, and the existence of woody-debris safety hazards are also increasing. If this wood is natural, it is not even subject to environmental review. If the Program chose to do so, they could make projects that would catch logs in a way that would make dangerous and unnavigable river-wide logjams. This could have the program benefit of strongly encouraging a new meander, in fact, this was presented as historical in the October LWD public meeting. However one would expect a limit to the program's use of natural woody debris, even if limits aren't required, in support of recreational boating feasibility and safety.

Engineered Natural Occurrence and No Net Loss Natural Occurrence of LWD, when linked with ELJs could be called Engineered Natural Occurrence. If the emphasis is widened to include the effect of controlled flows, it could be called Manipulated Natural Occurrence. If it is natural because of it natural attributes it can be called Substantial Natural Occurrence. This might be relative only to certain attributes such as being beneficial to fish. If wood is moved, such as in removing a hazard and placing it elsewhere or replacing it with another similar log elsewhere this can be done with No Net Loss of Naturally Occurring Woody Debris. It would seem that, with the perspective that naturalness can be influenced by engineering, the TRRP, USFS, and BLM could undertake hazard removal without compromising adherence to Natural Occurrence.

Alternative Safety Providers It would be easiest, and best if TRRP takes a lead role in providing for Public Safety, but there may be other options, and it may be that the Program isn't legally able to assist with some of these actions, even if they wish to. Design considerations and site placement are clearly in their court. Agencies next in line are Forest Service and BLM who *encourage recreation* on the river, have provided River Accesses, permits for Commercial Ventures and River Rangers (USFS). If they are constrained in hazard removal by the view that LWD is a "natural occurrence", perhaps RCD can step in. The USFS already have River Rangers who are safety educators and trained rescuers, and hopefully they will be able to prioritize funding for these positions. If no one else can touch Safety Education due to liability concerns, it could be presented by RCD partnering with American Whitewater or American Canoe Association which have published safety advice. Trained Rescuers now include Search and Rescue, and River Rangers, and could be further augmented by training local Volunteer Fire Departments. Trained private boaters and river professionals could be recruited as certified volunteers.

Scope of Work and Evaluation Criteria for the Trinity River Restoration Program's Phase I Channel Rehabilitation Project Review

November 4, 2011 Draft

John Buffington, Chris Jordan, Michael Merigliano, and Clair Stalnaker
Science Advisory Board

BACKGROUND

The Trinity River Restoration Program (TRRP) aims to improve the Trinity River's salmonid fishery by using managed dam releases, sediment augmentation, channel rehabilitation, and temperature control. Details on the goals, objectives, and history are found in several foundational documents listed or summarized in the TRRP's Integrated Assessment Plan (IAP). The foundational strategy is summarized as follows from the Trinity River Flow Evaluation Report (TRFER, USFWS & Hoopa Valley Tribe, 1999; p. 230):

> *"A dynamic alluvial channel morphology cannot be accomplished solely by prescribing releases. Mechanically removing riparian berms, minimally reshaping the existing channel in selected reaches, introducing coarse bed material above Rush Creek, and reducing or preventing sand input from tributaries also will be necessary."*

> *"The riparian berm cannot be removed by TRD dam releases: therefore, habitat rehabilitation must be preceded by a one-time sequence of mechanical removal at strategic locations. Subsequent long-term habitat creation and maintenance must be accomplished by flow and sediment management prescriptions rather than mechanical means."*

Channel rehabilitation along the Trinity River has involved local reshaping of the channel boundary, floodplain, and terraces, as well as addition of gravel and large woody debris (LWD). Pre-TRRP channel rehabilitation began with the "feathered edge" projects of the early 1990's, which were evaluated by Gallagher (1995). Since establishing the TRRP in 2002, implementation has emphasized notably larger projects, and in total these constitute about half of the 44 planned projects proposed in the TRFER. The Science Advisory Board (SAB) has been charged with overseeing a comprehensive evaluation of the first half of these projects (Phase I). This document describes the review process and scope of work proposed by the SAB. Emphasis is to be placed on learning from past management actions, understanding ecosystem processes, development of guidance for hypothesis testing, and advancing adaptive management by TRRP.

REVIEW PROCESS

The review would involve four major components:

I. Compilation by TRRP of information and status for each of the rehabilitation projects completed during Phase I, as well as any system scale data. Compile a matrix of data collected for each project, including project objectives, as-built information, hypothesized channel/habitat response, pre- and post-project data collection and analyses, and critical evaluation of project outcome(s) relative to stated objectives, hypotheses, and TRRP mission.

II. Initial analysis of data provided by the TRRP to evaluate the efficacy of the channel rehabilitation projects on an individual and combined basis. Analysis will be performed by a support contractor (Anchor QEA) in conjunction with the SAB and in collaboration with the TRRP and partners.

An interim report will be prepared that outlines present understanding of fluvial processes, the linkages of these processes and flow parameters to critical attributes of fish habitat and ultimately fish population success. This report will identify available information, identify data gaps, and outline approaches for hypothesis testing and evaluation.

III. Appointment of an expert technical panel (the panel) to examine the information provided above and to provide comments relative to three ecosystem process themes described below. Emphasis will be on evaluating the stated hypotheses for each project design, predicted and documented channel response at each site, demonstrated influence on adjacent reaches, and demonstrated contribution to habitat improvement for the larger river system (upper 40^{+} miles). Where no predictions or documented response have been made, the panel will be requested to describe the kinds of analyses that could have been done (using available information) for predicting and documenting channel response, with emphasis on the time frame for expected response and the uncertainty of future water year flow and sediment regimes. The panel recommendations will include descriptions for data collection, analyses, modeling and evaluation of response, assuming combinations of actions (e.g., mechanical alteration of the river, addition of coarse sediment, LWD, etc.). Given the panel's collective understanding of the present state of the river system, they will be requested to make recommendations for analyses that are appropriate for comparing alternative designs as part of Phase II. Consideration should be given to various combinations of channel shaping, berm removal, and sediment and LWD additions. Recommendations should consider basin history (e.g., mining, flooding, flow regulation), geomorphic context (e.g., process domains (Montgomery, 1999), confinement, alluvial versus bedrock-controlled reaches, tributary influence), and legal and permitting constraints.

IV. Following the expert panel recommendations, further analyses of Phase I activities may be conducted by the contractor in collaboration with the SAB. Analyses with recommendations would be delivered to TMC, TAMWG and TRRP partners. A final report with conclusions and recommendations from analyses of Phase I sites/data and specific recommendations, including an analytical framework for Phase II projects, emphasizing consideration of alternative designs, developing hypotheses, evaluation and testing. This should provide a sound scientific basis for adaptive management by TRRP.

EVALUATION CRITERIA

The panel will be thoroughly briefed and instructed to remain objectively focused on the process-based rehabilitation strategy described in the Department of Interior's Record of Decision (DOI ROD), the Trinity River Flow Evaluation Report (TRFER, USFWS and Hoopa Valley Tribe, 1999) and legal permitting constraints. With this context, the panel will be requested to evaluate data and analyses presented to them regarding project objectives and outcome(s). The following elements should be addressed by the panel in evaluating each project: (1) project design in relation to stated objectives and TRRP mission; (2) local channel response within the context of the geomorphic setting and basin history (flow and sediment transport events and other natural and anthropogenic disturbances); (3) influence on surrounding channel dynamics upstream and downstream of each project; (4) the contribution, if any, to increased salmonid spawning and rearing habitat complexity/suitability at the site and for the river system (upper 40^{+} river miles).

Ideally, there would be few criteria for evaluation, but approaches for project design have varied over time. This evolution of the design process and implementation must be documented. For example, some approaches built smaller projects depending on high flows to create and maintain channel complexity and associated resource values such as rearing habitat. Other approaches built large projects that removed vegetation and lowered the floodplain in order to provide fish habitat over a range of flows in case river flows were not strong enough to create a complex channel. More recently the placement of LWD is

included in project designs. These differences in design reflect not only the geomorphic setting but also the evolution of the thought process over time and differing views among project partners regarding design philosophy. Consequently, site-specific analyses and evaluation will be required. The influence of submerged vegetation on fish habitat has also been debated. Research along the Trinity River in the 1980's indicated that bare unvegetated banks were preferable, but recent TRRP observations of numerous young fish among submerged vegetation and LWD contradicts this. Actual fish use and annual production is the ultimate evaluation of efficacy, but this is complicated by spatial patterns of other variables such as temperature, the hatchery, and predation. Reasonable approximations may be made with modeling efforts recently developed in the northwestern U.S. (e.g., Blair et al., 2009) and can be presented in demonstration mode when significant gaps in information prevent detailed simulations. The support contract, Anchor QEA, has this capability and experience.

While each rehabilitation project may be unique in design and implementation, the compilation of information organized along the above themes will allow rapid assessment and choice of appropriate analyses associated with different implementation strategies and their implications for creating more complex fish habitat (e.g., Pitlick and Streeter, 1988; Pitlick et al., 1999).

An important aspect of this review is to provide a template for hypothesis testing and adaptive learning by providing examples, analytical approaches and tools for future use.

ECOSYSTEM PROCESS THEMES

Three themes, in the context of ecosystem processes, will be addressed in evaluating Phase I projects: fluvial response, fish habitat response, and riparian response, examined over time and space. Data and analyses relevant to each theme will be synthesized by the contractor in collaboration with the SAB and presented to partners, stakeholders, and the panel. Emphasis is to be placed on summarizing rehabilitation site objectives, designs, and assessments in terms of the physical setting of the site and the advancement of overall TRRP goals as stated in the DOI ROD and TRFER. Emphasis will be on stated hypotheses and evaluation of approaches used for hypothesis testing, predicting response, and assessing project outcome.

1. Fluvial response and processes contributing to channel complexity/dynamics at project sites and in adjacent upstream/downstream reaches: *"...dynamic changes can take place during individual flow events as the bed is scoured and re-deposited. Sediment transport at this scale is considered a critical part of disturbance and patch dynamics, and instrumental in habitat-conditioning processes like flushing fine sediment from spawning gravels."* (Bencala et al., 2006).

    a) Geomorphic context: Determine the geomorphic setting of each site (i.e., local process domain (Montgomery, 1999), network structure and proximity to tributaries, etc.) and the presence/absence of confining features, including vegetated berms, terraces, and bedrock control.

    b) Basin history and anthropogenic constraints: Identify major natural and anthropogenic disturbances that influenced the site prior to rehabilitation (e.g., mining, wildfire, flow regulation), and identify current anthropogenic constraints (e.g., legal maximum water surface elevations, houses and other structures, landowner issues, maximum possible reservoir releases).

    c) Flow and sediment transport context:
        i) Determine the water year type and streamflow history experienced by each site during and since completion, using available gage data within the river and in neighboring basins (Sanborn and Bledsoe, 2006).
        ii) Estimate the bed load transport (total volume and size distribution) passing through a project reach over time and space as a function of flow history and gravel augmentation activities.

d) Evaluate the spatial and temporal changes in channel morphology (topography, grain size, channel units, reach type (Montgomery and Buffington, 1997)), wood loading, and the extent of alluvial features in light of the site's geomorphic setting and its history of flow and sediment transport (1a-c). How dynamic is the site and what physical processes dominate observed changes (project construction vs. post-construction flows and sediment transport)?

e) Using the above information, consider how each site functions individually and collectively as a system.

Additional project analyses (as appropriate) may be conducted by contract personnel in collaboration with the SAB following expert panel recommendations (see Task 7, below).

2. Evolution of fish habitat quantity and quality available during critical fish life stage events: *"Mechanistic models can be used in stream and fishery communities....By linking flow to the specific behaviors, physiology, or growth of fish, the impact of the physical habitat on fish will come more directly from the fish's perspective, rather than just modifying flow and habitat and assuming that fish populations will respond in a direct and positive manner."* (Bencala et al., 2006.

   a) Estimate the amount of pre-rehabilitation rearing habitat and any increases in quality and quantity estimated to have resulted from the project actions and evolution over time, using available habitat data (e.g., habitat mapping and biomonitoring, 2D hydraulics, etc.), modeling combinations of habitat features, hydraulics (depths and velocities), water temperatures at various index flows using the channel structure, cover, hydraulics, water temperature and time series simulation concepts of IFIM (Bovee et al.,1998). Include all important habitat characteristics, such as boulders, undercut banks, large woody debris, aquatic plants and terrestrial plants submerged at low to high flows. Examine habitat metrics and performance indices for simulation of fish use and production over space and time. Examine time series simulations of water temperatures from construction to present time period, with emphasis on the timing of spawning and rearing life stages of the salmonid fishes.

   b) Identify any overriding events (extreme temperatures, extensive scour or deposition of the bed, extended unsuitable hydraulic conditions (e.g., extreme velocities, extended drought draw-downs, etc.) that may have influenced the habitat quality during important fish life stages over the time series examined. Particular attention should be directed to the role of annual hatchery introductions and the Program goal of increasing natural production of salmonid species.

   c) Using the best available information, make recommendations and provide example analyses for linking biological response to river processes. For example appropriate aspects from, fish habitat-related life history models (e.g. EDT, RIPPLE, SALMOD) could be used for developing simulations and estimates for system level annual production of selected salmonid species (see Bartholow and Henriksen, 2007; Blair et al., 2009; Knudsen and Michael, 2009). The intent is to further develop and demonstrate a set of analytical tools that could be used use by TRRP in the future.

Riparian vegetation response:

   a) Describe any vegetation- related channel narrowing as defined by the lowest (streamward) extent of woody riparian vegetation at convenient time intervals (say 3 years) since project completion.

b) Estimate expected equilibrium channel widths based on 1) hydraulics and sediment transport associated with expected flow regimes and sediment supplies, and 2) the change in channel narrowing rate as defined by vegetation (e.g., willow) establishment since construction.

c) Quantify the survivorship of planted and seed-origin woody riparian plants on channel rehabilitation sites and present costs in terms of labor, material, and the water allocated from dam releases, where appropriate.

d) Describe any large wood recruitment associated with rehabilitation site actions.

The above themes provide a framework to produce a data matrix and catalog of information about the rehabilitation projects, identify missing data, and suggest various types of analyses that might be used for more efficient design, implementation, and evaluation of Phase 2 rehabilitation projects. Due to expected gaps in information, some of these analyses and simulations may only consist of demonstrations useful for future evaluations. This information will be compared across rehabilitation sites to evaluate site-specific performance of different project designs and to develop an understanding of the cumulative function and effect of the projects on the Trinity River. The evaluations are specifically aimed toward assessment of the efficacy of the approaches used for past projects along with specific recommendations for improved approaches for modeling and directing fluvial processes. Analyses will emphasize prediction and evaluation of channel response and increase of suitable quantity and quality of fish habitats throughout the system during Phase II.

TASKS

The review process is further detailed below through a series of tasks. Elaboration of tasks will reflect modifications and approval of the initial thematic and analytical approaches outlined above, as well as partner input during the review process. Data availability and the time line imposed for conducting this review will limit the analyses and tasks that can be accomplished. Hence, we envision first-order (i.e., basic) analyses and assessments, rather than detailed evaluations that would require more time and effort than has been allotted.

Task 1. An initial call has already requested that Anchor QEA thoroughly review appropriate background documents: Subtask A. Foundational Document Review; Subtask B. Review of SAB scoping document; Subtask C. Review of USGS project on geomorphic change; and Subtask D. Review of the Value Engineering Study by CH2M Hill.

Task 2. Summary documentation of Phase I designs and identification of all subsequent assessments, field measures, and available data. It is anticipated that data compilation and summarization would be thorough and would reflect process linkages similar to that done for the Sacramento River (Stillwater Sciences, 2007). Anchor QEA will also identify forthcoming data and suggest a timeline and method for interfacing with the ongoing USGS study of geomorphic change.

Task 3. After review by TMC, TRRP, partners and stakeholders, the summary document will incorporate any additional information. Based on the summary and available data, Anchor QEA will suggest specific analyses that could be done to better understand site and system level responses. Recommended analyses will focus on the three themes and linkages among them.

Task 4. A final scope of work and timeline will be delivered to TMC, TRRP, partners and stakeholders for approval.

Task 5. In collaboration with the SAB, Anchor QEA will conduct additional analyses and prepare an interim report. The interim report will summarize existing information, compare and contrast various site design approaches, include appropriate analyses of site and system evolution and suggest a framework for Phase II implementation, including evaluation of alternative site designs, formulation of hypotheses, and assessment of response over time and space. This could involve additional work at Phase I sites if appropriate. The suggested framework would include examples demonstrating specific analytical procedures, tools, and models as appropriate.

Task 6. Following review and modification, Anchor QEA and the SAB will complete the interim report for delivery to an outside panel of experts for review, comment and suggestions.

Task 7. A panel of technical experts will be identified and provided the interim report from Task 6. Interaction among SAB, Anchor QEA and the expert panel may be iterative. This will depend on the panel's initial suggestions and comments on applicable analyses and/or demonstrations of additional analyses that they would like to see conducted.

Task 8. A final review including recommendations will be presented by the panel. Recommendations regarding maintenance of existing features or needed modifications to better achieve project goals and additional potential benefits at each site, and suggested approaches for comparing alternative project designs, hypothesis development, and evaluation during Phase II should be included.

Task 9. Building upon the panel suggestions, the SAB and Anchor QEA will prepare a draft final report, including review of Phase I activities, conclusions and a template for conducting sound scientific designs, hypotheses, predictions and evaluations for Phase II implementation. This report will be distributed to TMC, TRRP, partners and stakeholders for comment. The final report will include recommendations for TMC adoption.

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TRINITY RIVER RESTORATION PROGRAM
P.O. BOX 1300, WEAVERVILLE, CA
PHONE: 530-623-1800, FAX: 530-623-5944

MEMORANDUM

TO: ROBIN SCHROCK
FROM: DAVID GAEUMAN
CC: DJ BANDROWSKI, KENT STEFFENS, JOE POLOS
SUBJECT: **DEFINITION OF WATERSHED REHABILITATION IN TRRP FOUNDATIONAL DOCUMENTS**
DATE: SEPTEMBER 26, 2011

The Record of Decision (ROD)
ROD

D. Watershed Restoration
The Trinity Management Council will guide an upslope watershed restoration program to address the problems of excessive sediment input from many of the tributaries of the Trinity River resulting from land use practices. The watershed protection program of the Preferred Alternative includes road maintenance, road rehabilitation and road decommissioning on private and public lands within the Trinity River basin below Lewiston Dam, including the South Fork Trinity River basin.

ROD, 2000. *Record of Decision: Trinity River Mainstem Fishery Restoration Final EIS/EIR.* U.S. Department of the Interior, Washington D.C.

U.S. Fish and Wildlife Service. 2000. *Final Environmental Impact Statement/Environmental Impact Report for the Trinity River Fishery Restoration.* October 2000.

Chapter 2, Description of Alternatives

The Flow Evaluation Alternative, coupled with additional watershed protection efforts (described in the Mechanical Restoration Alternative), was identified as the Preferred Alternative in terms of best meeting the purpose and need and goals and objectives…"

WS activities were included in the referred alternative bc "(1) they have been determined in the past to help restore fish habitat by reducing sediment inputs to the Trinity River mainstem; (2) they are consistent with the ROD for the Northwest Forest Plan and its Aquatic Conservation Strategy to reduce upslope sediment production by improving drainage on necessary roads, while also decommissioning roads that no longer serve management purposes; (3) they are consistent with the Total Maximum Daily Load (TMDL) process established under the Clean Water Act, which has identified the Trinity River as a waterbody impaired by sediment and in need of remedial measured…"

"The Mechanical Restoration Alternative would include measures to limit sediment inputs into the mainstem Trinity River beyond those assumed under the No Action Alternative, including

accelerated road decommissioning, road maintenance, and road rehabilitation on public and private lands."

"Accelerated road decommissioning, road maintenance, and road rehabilitation would primarily be focused on public lands within Trinity National Forest watershed (South Fork and mainstem areas below Lewiston Dam)..."

"Road decommissioning would consist of removing culverts, out-sloping, and ripping roads (primarily Level 1 roads) that cannot be maintained with existing and foreseeable budgets." "Rehabiliation of the remaining roads would consist of resurfacing or culvert replacement over 22 years to support ongoing USFS, county, and private efforts..." "Annual maintenance, which is primarily grading and some placing of rock, would ensure that all drainage structures perform as designed."

FEIS/EIR, Appendix C

Road maintenance involves grading, rocking and clearance of drainage structures on existing roads to ensure that a minimum amount of erosion occurs.

Road rehabilitation involves the upgrade of existing road systems, that have been determined to be necessary for long-term management purposes such as residential access, logging, recreation, fire protection, etc. Work consists of replacing undersized culverts with new culverts or bridges capable of accommodating a 100-year storm, associated debris, as well as fish passage in anadromous streams. Outsloping, rocking of roads, energy dissipaters, and the addition of new drainage structures to reduce the accumulation of water in inboard ditches are accepted methods of reducing erosion from road systems.

Road decommissioning is the removal of stream crossing structures, culverts, "Humboldt Crossings," and sometimes reshaping, ripping, seeding and mulching of the road surface, depending on slope, soil type and other conditions.

Watershed restoration priorities must address the physical, biological and legal issues associated with the Trinity River. The following criteria are recommended:

1. Tributary watersheds located between the North Fork Trinity confluence and Lewiston Dam shall be the highest priority.
2. Key watersheds designated pursuant to the Northwest Forest Plan
3. Refugia stream reaches noted for accommodating wild stocks of salmon and steelhead and/or listed species pursuant to/under the Endangered Species Act.
4. Roaded stream crossings at risk of catastrophic failure or migration barriers for anadromous fish.
5. Lands that are available for restoration because of landowner permission and/or completion of environmental compliance and permitting (Watershed Analysis, NEPA/CEQA/CWA 404, 401, etc.).
6. Projects that provide a cost share from the landowner/agency or other funding sources.

7. Sub-watersheds identified as priorities through the TMDL, as well as State and Tribal Water Quality Control Plan processes and monitoring programs.

8. Projects that allow continued collaboration through the restoration infrastructure of TCRCD and NRCS.

TRRP Criteria for Funding Watershed Projects

The funding criteria listed below were accepted in the April 2008 TRRP Watershed Workgroup meeting.

The overriding criterion for funding watershed projects is that the project should directly contribute to recovery of anadromous salmonid populations in the Trinity River and its tributaries. All other criteria are intended to select the projects most likely to produce this outcome.

1. Sediment control projects should reduce the delivery of fine sediment (fine sand to fine gravel) to the Trinity River or to tributary habitats used by anadromous salmonids.

2. Projects should be consistent with the Implementation Plan for the Preferred Alternative of the Trinity River EIS/EIR (Appendix C of the Trinity River FEIS/EIR).

3. Project proposals should include a complete project description, budget, deliverables time table, and plans for monitoring project performance criteria including completion as designed, and effectiveness.

4. Sediment control projects that exclude a large quantity of fine sediment relative to the local fine sediment budget have higher priority.

5. Projects that leverage matching funds from other sources have higher priority.

6. Projects that are identified by or are consistent with existing watershed plans, including the Northwest Forest Plan, the Trinity River TMDL, or State Water Quality Control Plans, will be given higher priority.

7. Sediment control projects with a lower cost per unit sediment excluded have higher priority.

8. Projects with complete planning (NEPA/CEQA) and permitting documents, or demonstrate that documents will be complete by projected start date, will be given higher priority.

9. Projects that provide multiple fishery benefits will be given higher priority.

10. The applicant must demonstrate they have the required experience and resources to complete the project.

Legislative and administrative linkages between restoration of the Trinity River's fish and wildlife resources and watershed restoration in the Trinity Basin.

Public Law 98-541 - Trinity River Basin Fish and Wildlife Management Act

The initial legislation that started the Trinity River Restoration Program, Public Law 98-541 Trinity River Basin Fish and Wildlife Management Act, identified that an interagency task force has developed a fish and wildlife management plan to restore the fish and wildlife resources of the Trinity River Basin and that the Secretary of the Interior (Secretary) needed authority to implement the plan. The plan was developed as part of the *Trinity River Basin Fish and Wildlife Management Program – Final EIS October 1983* and P.L. 98-541 gave the Secretary the authority to implement it. In addition to the action plan identifying watershed restoration as a component of the overall Basin restoration plan, Section 2(a)(1)(B) of P.L. 98-541 states that the program shall include "rehabilitation of fish habitats in tributaries of such river below Lewiston and in the south fork of such river".

Trinity River Basin Fish and Wildlife Management Program – Final EIS October 1983

Several action items address work in Trinity River tributary watersheds as needed to meet restoration goals. Action item #3 (Rehabilitate and maintain the mainstem Trinity River) identifies reducing tributary sediment input; Action item #4 addresses rehabilitating tributaries in a similar manner as action item #3; Action item #5 identifies watershed rehabilitation via revegetation; and Action item #6 identifies rehabilitation of the South Fork Trinity River via measures identified in action items 3,4,and 5.

Public Law 102-575 - Central Valley Project Improvement Act.

P.L. 102-575, the CVIPA, Section 3406(b) (23), identifies actions (i.e.: completion of the Trinity River Flow Evaluation) necessary to meet the Federal trust responsibilities to the Hoopa Valley Tribe and to meet the restoration goals of the Trinity River Basin Restoration Act (P.L. 98-541). In this reference to meet the goals of P.L. 98-541, in addition to meeting the tribal trust responsibilities, a linkage is established between the CVPIA and the actions proposed under P.L. 98-541, including watershed restoration throughout the Basin, to meet fish and wildlife restoration goals.

Public Law 104-143 - Trinity River Basin Fish and Wildlife Management Reauthorization Act of 1995

This act (P.L. 104-143) reauthorized the existing restoration program and among other things clarified/extended the program downstream of Weitchpec along the Klamath River.

Trinity River Mainstem Fishery Restoration EIS/EIR and Record of Decision

The preferred alternative of the Trinity River Mainstem Fishery Restoration EIS/EIR and Record of Decision (ROD) is a combination of the Trinity River Flow Evaluation alternative and the watershed component of the Mechanical Restoration alternative. This component of the preferred alternative is to address "upslope watershed restoration program to address the problems of excessive sediment input". The description of the watershed area covered by the preferred alternative of the ROD includes areas "within the Trinity River Basin below Lewiston dam, including the South Fork Trinity River basin."

Authorization of Appropriations for Activities Identified in the ROD

While the previous legislation for the Trinity River Restoration Program (P.L. 98-541 and 104-143) provided authorization for appropriations, these have both expired and the primary authorizing legislation that is used to appropriate funds for the TRRP is the CVPIA and BOR A30-Water and Related actions. Discussions among the TMC have focused on the linkage between the construction and operation of the TRD and, primarily, the linkage to watershed rehabilitation work in the South Fork Trinity River. While it is clear that the intent of the ROD was to include watershed work in the South Fork Trinity, the Solicitor's Office has stated if a causal linkage cannot established between the TRD then funds cannot be expended on the South Fork Trinity (Solicitor's Opinion May 22, 1998).

Once approach that might be worth pursuing concerning authorization of appropriations for work in the South Fork Trinity is that the ROD contains language noting that the concurrence between the Secretary and the Hoopa Valley Tribe with the recommendations contained in the ROD as the preferred alternative meet the obligations of CVPIA Section 3406(b)(23)(B)concerning Tribal concurrence (ROD, pg 26). In Section 3410 of the CVPIA, the following language can be found "There are authorized to be appropriated such sums as may be necessary to carry out the provisions of this title", and with ROD being the vehicle to meet the Tribal concurrence of Section 3406(b)(23)(B), there seems to be a linkage with the authorization of appropriations and the actions prescribed in the Trinity River Mainstem Fishery Restoration ROD, including watershed work.

BACKGROUND INFO – text highlighted in yellow addresses watershed work.

Trinity River Mainstem Fishery Restoration EIS/EIR and Record of Decision

ROD page 2:

For the reasons expressed in this ROD, the Department's agencies are directed to implement the Preferred Alternative as described in the FEIS/EIR and as provided below. This alternative best meets the statutory and trust obligations of the Department to restore and maintain the Trinity River's anadromous fishery resources, based on the best available scientific information, while also continuing to provide water supplies for beneficial uses and power generation as a function of Reclamation's Central Valley Project (CVP).

ROD page 10:

Preferred Alternative: consists of the Flow Evaluation Alternative which includes increased variable annual instream flow releases from Lewiston Dam, a coarse sediment introduction program, 47 new channel projects (mechanical channel rehabilitation), and implementation of an adaptive management program. Additionally, this alternative includes a watershed restoration program identical to the watershed protection efforts identified in the Mechanical Restoration Alternative.

ROD page 14

D. Watershed Restoration

The Trinity Management Council, in consultation and cooperation with Hoopa and Yurok Tribes, other responsible Federal, State, local jurisdictions, and private landowners will guide an upslope watershed restoration program to address the problems of excessive sediment input from many of the tributaries of the Trinity River due to past land use practices. The watershed protection program of the Preferred Alternative includes road maintenance, road rehabilitation and road decommissioning on private and public lands within the Trinity River basin below Lewiston Dam, including the South Fork Trinity River basin. Approximately 80 percent of the lands within the Trinity basin are federally managed of which the USDA Forest Service administers approximately 95 percent and the Bureau of Land Management administers five percent. Of the remaining 20 percent privately owned land in the basin, approximately half (10 percent of the total) are industrial timberlands, with the remainder being small private holdings. Additional environmental planning and environmental compliance steps will be necessary in order to acquire all the necessary permits and other authorizations prior to implementation of this portion of the Preferred Alternative.

Draft EIS/EIR – Page 2-26

2.1.6 **Mechanical Restoration Alternative**

This alternative depends on mechanical means to restore fish population. Flows would be maintained at not less than 340,000 acre-feet per year (af/yr). The level of mechanical rehabilitation projects indentified in the Flow Evaluation and Percent Inflow Alternaives would be the same for this alternative. However, unlike those alternatives, the mechanical rehabilitation projects would be mechanically maintained because the relatively limited flows associated with this alternative would be insufficient to promote adequate streambed and sediment mobilization.

A key element of this alternative would be the inclusion of an extensive watershed protection component, which would limit sediment inputs into the mainstem Trinity River.

Draft EIS/EIR – Page 2-29

Watershed Protection. The Mechanical Restoration Alternative would include measures to limit sediment inputs into the mainstem Trinity River beyond those assumed under the No Action Alternative, including accelerated road decommissioning, road maintenance, and road rehabilitation on public and private lands. These additional measures would essentially represent a modification of a portion of a 1993 proposal by the Committee for Healthy Communities in Healthy Forests, as endorsed by the Trinity BioRegional Group and Trinity County for implementation of the President's Forest Plan.

Accelerated road decommissioning, road maintenance, and road rehabilitation would primarily be focused on public lands within Trinity national Forest watershed (South Fork and mainstem areas below Lewiston Dam), which contains approximately 3,450 miles of mostly unpaved roads. The area would also include a small portion of the Six Rivers National Forest in the lower South fork and lower mainstem watersheds, as well as the private lands and county roads within the entire Trinity River watershed. This type of proposed work is identified as critical in restoring salmon and steelhead habitat as part of the ROD on the President's Forest Plan (Option 9: U.S. Department of Agriculture and U.S. Department of the Interior, 1994). The USFS, through the plan, adopted new Riparian Management Zone Standards and Guidelines prescribing improved standards for roads and decommissioning of those roads deemed unnecessary.

Road decommissioning would consist of removing culverts, out-sloping, and ripping roads (primarily Level 1 roads) that cannot be maintained with existing and foreseeable budgets. Many of the roads are already closed to public traffic, but pose potential and ongoing erosion problems. Rehabilitation of the remaining roads would consist of resurfacing or culvert replacement over 22 years to support ongoing USFS, county, and

private efforts, which are currently very limited due to funding and staffing. Annual maintenance, which is primarily grading and some placing of rock, would ensure that all drainage structures perform as designed.

BLM's Trinity River Watershed Analysis contains an average annual sediment yield estimate at Hoopa of 1,283 yd^3 per square mile (US Bureau of Land Management, 1995). Extrapolating this to the entire basin (exclusive of the areas upstream of Lewiston Dam and the federally designated roadless/wilderness areas), the 2,223-square-mile are in question would produce approximately 2.85 million yd3 if sediment per year. Full-scale implementation of the watershed protection program would result in a reduction of 240,000-480,000 yd^3/yr, which is approximately 9-17 percent of the average annual sediment produced in the Trinity River Basin.

Trinity River Basin Fish and Wildlife Management Reauthorization Act of 1995, PL 104-143

SEC. 2. CLARIFICATION OF FINDINGS.

Section 1 of the Act entitled ``An Act to provide for the restoration of the fish and wildlife in the Trinity River Basin, California, and for other purposes'', approved October 24, 1984 (98 Stat. 2721), as amended, is amended—

(1) by redesignating paragraphs (5) and (6) as paragraphs (6) and (7), respectively;

(2) by adding after paragraph (4) the following: ``(5) Trinity Basin fisheries restoration is to be measured not only by returning adult anadromous fish spawners, but by the ability of dependent tribal, commercial, and sport fisheries to participate fully, through enhanced in-river and ocean harvest opportunities, in the benefits of restoration;''; and

(3) by amending paragraph (7), as so redesignated, to read as follows: ``(7) the Secretary requires additional authority to implement a management program, in conjunction with other appropriate agencies, to achieve the long-term goals of restoring fish and wildlife populations in the Trinity River Basin, and, to the extent these restored populations will contribute to ocean populations of adult salmon, steelhead, and other anadromous fish, such management program will aid in the resumption of commercial, including ocean harvest, and recreational fishing activities.''.

SEC. 3. CHANGES TO MANAGEMENT PROGRAM.

(b) Fish Habitats in the Klamath River.--Paragraph (1)(A) of such section (98 Stat. 2722) is amended by striking ``Weitchpec;'' and inserting ``Weitchpec and in the Klamath River downstream of the confluence with the Trinity River;''.

Public Law 102-575 - Central Valley Project Improvement Act.

Section 3406. Fish, Wildlife, Improved Water Management & Conservation

(b) Fish and Wildlife Restoration Activities.--The Secretary, immediately upon the enactment of this title, shall operate the Central Valley Project to meet all obligations under state and federal law, including but not limited to the federal Endangered Species Act, 16 U.S.C. s 1531, et seq., and all decisions of the California State Water Resources Control Board establishing conditions on applicable licenses and permits for the project. The Secretary, in consultation with other State and Federal agencies, Indian tribes, and affected interests, is further authorized and directed to:

....

(23) In order to meet Federal trust responsibilities to protect the fishery resources of the Hoopa Valley Tribe, and to meet the fishery restoration goals of the Act of October 24, 1984, Pub. L. 98-541, provide through the Trinity River Division, for water years 1992 through 1996, an instream release of water to the Trinity River of not less than 340,000 acre-feet per year for the purposes of fishery restoration, propagation, and maintenance and,

(A) By September 30, 1996, the Secretary, after consultation with the Hoopa Valley Tribe, shall complete the Trinity River Flow Evaluation Study currently being conducted by the U.S. Fish and Wildlife Service under the mandate of the Secretarial Decision of January 14, 1981, in a manner which insures the development of recommendations, based on the best available scientific data, regarding permanent instream fishery flow requirements and Trinity River Division operating criteria and procedures for the restoration and maintenance of the Trinity River fishery; and

(B) Not later than December 31, 1996, the Secretary shall forward the recommendations of the Trinity River Flow Evaluation Study, referred to in subparagraph (A) of this paragraph, to the Committee on Energy and Natural Resources and the Select Committee on Indian Affairs of the Senate and the Committee on Interior and Insular Affairs and the Committee on Merchant Marine and Fisheries of the House of Representatives. If the Secretary and the Hoopa Valley Tribe concur in these recommendations, any increase to the minimum Trinity River instream fishery releases established under this paragraph and the operating criteria and procedures referred to in subparagraph (A) shall be implemented accordingly. If the Hoopa Valley Tribe and the Secretary do not concur, the minimum Trinity River instream fishery releases established under this paragraph shall remain in effect unless increased by an Act of Congress, appropriate judicial decree, or agreement between the Secretary and the Hoopa Valley Tribe. Costs associated with implementation of this paragraph shall be reimbursable as operation and maintenance expenditures pursuant to existing law.

Section 3410. Authorization of Appropriations

There are authorized to be appropriated such sums as may be necessary to carry out the provisions of this title. Funds appropriated under this title shall remain available until expended without fiscal year limitation.

Trinity River Basin Fish and Wildlife Management Program – Final EIS October 1983

Identifies the spawning escapement goals for the entire Trinity River Basin for a fully restored system.

Proposed the restoration program with 11 action items. Below are the action items that are pertinent to the watershed restoration recommendations that were adopted as part of the preferred alternative of the ROD.

#3. Rehabilitate and maintain the main Trinity River below Lewiston by rebuilding spawning riffles and dredging holding pools and cleaning food producing areas…Corrective work will include, but not be limited to, the following:

A) Reducing sediment inflow from tributary streams.
B) Removal of accumulated sediments from river channel where needed.
C) Rehabilitation of spawning riffles, food-production areas, nursery habitats, etc..
D) Development or rehabilitation of holding pools.
E) Periodic modification of tributary deltas for fishery habitat
F) Removal of upstream fish migration barriers.
G) Continuing maintenance of rehabilitated areas.

#4. Rehabilitate and maintain tributaries below Lewiston through measures similar to those in Action 3 above and by improving road crossings, removing barriers and screening diversions...

Corrective measures based on extensive habitat surveys of these tributaries will include, but not be limited to, the following:

A) Barrier removal for fish passage.
B) Sediment control.
C) Construction of halding and nursery areas.
D) Screening water diversions.
E) Streambank stabilization.
F) Spawning are rehabilitation.
G) Delta modification.
H) Periodic maintenance of rehabilitated areas.

#5. Rehabilitate and maintain watersheds below Lewiston through revegetation of barren slopes, landslide areas and streamside bands and overflow areas….

The work necessary to rehabilitate the watersheds of the basin may include, but not be limited to the following:

A) Ensure that activities within the watershed are closely monitored to detect possible damage to the fishery.
B) Direct revegetation efforts toward saving soil (a nonrenewable resource) for future production of forest products and wildlife.
C) Establish vegetation on stream overflow areas. On some soil types and in areas where a large quantity of sediment exists adjacent to stream channels, sprinkler irrigation may be required to assure establishment of vegetation.
D) Stabilize barren slopes and landslide areas with vegetation or other appropriate rehabilitation measures.
E) Assist with the implementation of nonerosive drainage measures.
F) Alter stream and drainage crossings where necessary to avoid excessive concentration of flow.

#6. Rehabilitate and maintain South Fork Trinity River and Watershed through measures similar to those listed above for Actions 3,4, and 5.

The work proposed under this action item is very similar to that proposed for the main Trinity River Basin under action items three, four, and five. Only damaged areas of highest priority are targeted for work because of the following reasons:

A) The flushing action of available full natural flows will help improve reiverine habitat.

B) The major resource managers in the watershed will continue to conduct activities in accordance with effective management practices to achieve the goals of this program.

C) Corrective work on damaged lands under Forest Service control will be performed by the Forest Service to the extent that funds are made available. The California Department of Forestry and Soil Conservation Service will encourage and assist private land owners in rehabilitation of damaged lands, particularly in Grouse and Pelletreau Creek watersheds. Financial assistance toward this rehabilitation can be provided where warranted.

D) It is possible to realize significant fishery increases with limited habitat rehabilitation work.

E) Recent federal wild and scenic river designation of this stream will prevent project development that would regulate instream flow. (The designation is a subject of legal reviews during preparation of this EIS.)

Trinity River Basin Watershed Assessment – Draft Scope and Discussion

OBJECTIVE

The purpose of this solicitation is to procure a multi-scale watershed assessment to help guide ecosystem restoration in the Trinity and Lower Klamath River Basins. This assessment is intended to identify and prioritize the types and locations of restoration activities that will most effectively contribute to recovery of the region's anadromous fisheries. Attributes of special interest include sediment production and delivery potential, fish passage, and the quality of aquatic habitat in tributaries used by, or potentially used by, anadromous fishes contributing to the Trinity River fisheries. The assessment must address rehabilitation needs at both regional and local spatial scales. A broad assessment is required to identify landscape disturbances and recovery potential at the scale of sub-watersheds tributary to the Trinity River, whereas a more focused assessment is needed to identify and prioritize individual restoration actions within priority sub-watersheds. Collecting, organizing, and synthesizing all existing information relevant to ecosystem health in the study area, identifying information gaps, and development of a hierarchical spatial database of landscape attributes are envisioned to be key components of these assessments.

DEFINITIONS

All lands upstream from and tributary to Lewiston Reservoir comprise the Upper Trinity Basin. The Middle Trinity River Basin is herein defined as those lands tributary to the Trinity River between Lewiston Dam and the confluence of the Trinity River and the South Fork Trinity River. The Lower Trinity River Basin is defined as lands tributary to the Trinity River downstream from the confluence of the Trinity River and the South Fork Trinity River. The South Fork Trinity River Basin is considered a separate basin from either the Upper, Middle or Lower Trinity River Basins. The Lower Klamath Basin is defined as lands tributary to the Klamath River downstream from its confluence with the Salmon River. The Upper, Middle, and Lower Trinity, South Fork Trinity, and Lower Klamath Basin together comprise the Full Study Area to be considered under this agreement.

STATEMENT OF WORK

1. Reconnaissance of Existing Data and Analyses Pertaining to Watershed Restoration in the Trinity-Klamath Region (Full Study Area)

2. Prepare and Present Detailed Work Plan

3. Project Development Meeting

4. Quarterly Coordination Meetings

5. Develop Hierarchical Spatial Database Covering the Middle Trinity River Basin

6. Watershed and Ecosystem Assessment Report for the Middle Trinity River Basin

   A. Review and synthesize existing watershed restoration strategies and related information for the Middle Trinity River Basin. Identify information gaps and propose steps to obtain the necessary data.

   B. Identify information gaps and additional data collection and/or analyses needed to address

information gaps.

C. Propose a basin-scale strategy for reducing sediment production and delivery and for restoring aquatic habitat throughout the Middle Trinity Basin. Identify priority sub-basins where restoration efforts will be most effective.

D. Develop criteria for evaluating and comparing watershed restoration actions, and document a protocol for identifying and prioritizing specific restoration projects within high-priority sub-basins.

E. Apply the criteria and selection protocol described in D to develop a prioritized list of potential projects targeting one or more of the following objectives:
   i. Reduce fine sediment production and delivery to the stream network.
   ii. Removal of barriers to anadromous fish migration.
   iii. Improve aquatic habitat and ecosystem function.

F. Document database content and structure. Propose a plan for long-term database management that incorporates network access and linkages to other national databases that target ecosystem function and that is ready for expansion to the Full Study Area as funding becomes available.

7. Develop Proposal for Extending the Analysis to the Full Study Area

Prepare a proposal summarizing a study plan to:

A. Review and synthesize existing watershed restoration strategies that have been implemented within the Trinity-Klamath region.

B. Identify information gaps and identify additional data collection and/or analyses needed to address information gaps.

B. Extend the spatial database developed for the Middle Trinity River Basin to cover the Upper Trinity, Lower Trinity, South Fork Trinity, and Lower Klamath River basins.

B. Propose a regional database for restoring ecosystem function throughout the Full Study Area.

D. Revise database documentation and recommendations for database management plan as needed.

IDT DISCUSSION

- Support for concept, many projects have been performed almost as a "hodge-podge" and an over-all assessment is valuable.
- Liked the criteria for evaluation and that this project would identify the data gaps.
- Support the concept of a watershed assessment and like the spatial database portion.
- Like the scope of work and liked the idea that the spatial database would be a desktop version and not an unusable model.
- ROD and preferred alternative is to reduce fine sediment and tie it into the flow study.
- Assessment may be "mission creep" by focusing outside the 40-mile restoration reach.
- Quality of aquatic habitat is not considered in the ROD.
- Budget is not known and that this will need to be addressed.
- Analysis is necessary to give ecosystem context to TRRP activities.
- The barrier assessment is very important.
- Plan will be reedited and presented to TMC.

Status update for the California Hatchery Scientific Review July 1- Dec 1, 2011

On July 18 through July 22, 2011 the Hatchery Scientific Review Panel and key technical contractors completed a regional workshop in Sacramento, CA for the Central Valley 2 regional area. This regional review workshop included: tours of Feather River, Coleman and Livingston Stone hatcheries and discussions with hatchery and M&E managers, and continued work on Standards and Guidelines and Statewide Issues. On July 21 and July 22, 2011 the HSRP and Policy Committee held a joint meeting to provide a progress update. In July 2011 the technical contractors also completed the Central Valley Area 2 Draft Program Briefing Packets and submitted them to PSMFC and USFWS.

In August 2011 the technical contractors coordinated, prepared, participated and facilitated in a conference call on August 3, 2011 with the Policy Committee. The technical contractors continued to review materials for Statewide Issues, refined maps for Klamath-Trinity program reports, and developed draft recommendations for all regional programs.

In September, the HSRP and key technical contractors completed a workshop to continue developing and complete Statewide Topics in Sacramento, CA. This workshop included review and continued work on Statewide Topic material and a joint meeting of the HSRP and Policy Committee. The technical contractors coordinated, prepared for, participated in and facilitated a conference call with HSRP Subgroup 6 to assist the Subgroup on further development of Standards and Guidelines for their Statewide Topic on September 1, 2011. The technical contractors also reviewed and edited draft Observations and Recommendations for 19 regional programs to be included in the final report and prepared an outline for the Final Report. It should be noted that while progress was made on each topic there was not consensus on how certain metrics would be applied to develop programmatic recommendations for each of the 19 programs completed. In November, another workshop was held with the entire HSP to complete work on final drafts of the statewide issues as well as provide additional review and develop draft recommendation for the 19 individual program reports.

An additional workshop with the entire HSP will be held in late January, 2012 to finalize the final drafts of all reports. After review by the Hatchery Scientific Review Policy Group (USFWS, CDFG, NMFS, Hoopa Valley Tribe, and Yurok Tribe), it is expected that the final report will be made available for public distribution in late March of 2012.