

TRINITY MANAGEMENT COUNCIL

Indian Creek Lodge (530)-623-6294
59741 Hwy 299 West, Douglas City, CA 96024
Draft Agenda for December 11, 2013

Wednesday, December 11, 2013

<u>Time</u>	<u>Topic, Purpose and/or Decision to be Made</u>	<u>Discussion Leader</u>
<i>Regular Business:</i>		
9:00	Introductions: Brian Person, Chair ▪ Welcome ▪ Approval of Agenda ▪ Approval of September 2013 Minutes	
9:15	Open Forum: Comments from the public	Brian Person
9:30	Report from TMC Chair ▪ Federal/Regional updates ○ TMC action items ○ TAMWG items ○ Supplemental flows ▪ Chair/Vice-chair election	Brian Person
10:30	Report from TAMWG Chair	Elizabeth Hadley
11:00	Report from Executive Director ▪ Federal budget update - TRRP budget strategy ▪ Work Group updates ○ Partner Participant assignments ○ New WG Coordinators ○ Work Group roles ○ Public participation – TRRP calendar and coordination email ▪ Work Group updates ○ Quarterly summery (handout) ○ TRRP Invasive Plant Management Actions	Robin Schrock
11:30	Implementation Update ▪ 2013 Rehabilitation projects updates ▪ 2014/2015 Rehabilitation projects updates ▪ Phase 2 Strategic planning	DJ Bandrowski
12:00	Lunch	

Information / Decision Items:

1:00	Science Update	Ernie Clarke
	▪ Phase 1 Review ▪ 2013 Science Accomplishments ▪ Fish production model progress ▪ 2015 AWP timeline	
2:00	Gravel Augmentation Work Group Update	Ernest Clarke
3:00	Flow Work Group Update	Rod Wittler
4:00	2014 quarterly meeting scheduling	Brian Person
4:45	Open Forum	Brian Person
5:00	Adjourn	

Lunch menu: http://www.trinideli.com/Lunch_menu.html

Please have exact change if you plan to order lunch. We will have it delivered to Indian Creek around 12 noon.

Meeting access information:

Topic: TMC Meeting
Date: Wednesday, December 11, 2013
Time: 9:00 am, Pacific Standard Time
Meeting Number: 578 962 121
Meeting Password: Abc123!!

To join the online meeting

Go
to <https://trrp.webex.com/trrp/j.php?ED=248306012&UID=487141902&PW=NNDU4MTFINjEz&RT=MIM0>

Audio conference information

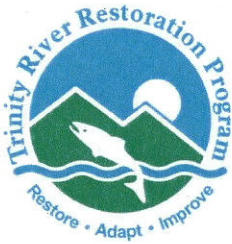
Call-in toll number (US/Canada): 1-408-792-6300

Access code: 578 962 121

For assistance

- 1. Go to <https://trrp.webex.com/trrp/mc>
2. On the left navigation bar, click "Support".
To add this meeting to your calendar program (for example Microsoft Outlook), click this link:
<https://trrp.webex.com/trrp/j.php?ED=248306012&UID=487141902&ICS=MS&LD=1&RD=2&ST=1&SHA2=AAAAAtQqVl8gs-RrzQKvpsJwrAbs3oo8kXDiYUK9dMWbppKA>

To check whether you have the appropriate players installed for UCF (Universal Communications Format) rich media files, go to <https://trrp.webex.com/trrp/systemdiagnosis.php>.



Trinity River Restoration Program

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

December 10, 2013

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

Dear Mr. Person:

The Trinity Adaptive Management Working Group (TAMWG) met on December 9 and 10, 2013. This letter serves to provide you with a summary of that meeting with our resulting policy management recommendations, as required by TAMWG's bylaws.

We received an update from our Designated Federal Officer which included the progress of the action-decisions/activities tracker spreadsheet. This spreadsheet will be available in draft form on the TAMWG website. We also received information on the program's public information requirements and public openness of program work groups.

We continue to appreciate your TMC update, in person, which provides us with the opportunity to ask questions.

The Trinity River Restoration Program (TRRP) Executive Director and staff provided program status and updates. Among the updates was a presentation from the Watershed Workgroup which resulted in our **recommendation that the TMC ask the Science Advisory Board to determine whether or not there is a causal linkage between watershed restoration throughout the entire basin below the dams and the construction and operation of the Trinity River Division.**

An update on fish projections was presented and there was an overall concern at the way the Pacific Fishery Management Council determines their annual projections. Additionally, there was a presentation from the Trinity County Weed Management Area which resulted in our **recommendation that the TMC make funding available to noxious weed mitigation on the main stem restoration projects and that the TRRP coordinate with the Trinity County Weed Management Area.**

TRRP staff reported on the current flow scheduling proposals for the 2014 water year. As it appears that we are likely entering another dry year, **TAMWG recommends that the TMC direct the Flow Workgroup to consider in their proposal for Normal, Dry, and Critically Dry years a reservation of water for Fall Flows to protect fish, like what has been done over the last two years.** The vote passed seven to three with the minority offering the following

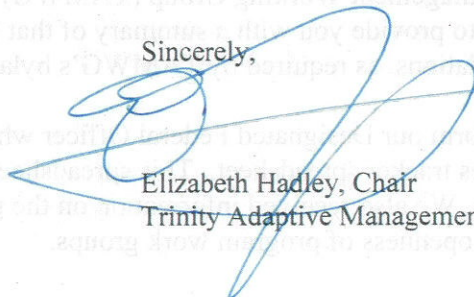
opinion:

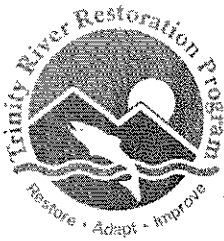
"TAMWG members Tom Stokely, Ed Duggan, and David Steinhauser voted no on this motion because they are concerned that the motion might imply that the TAMWG is in favor of recommending to subsume Klamath augmentation flows into Trinity ROD flows, and that this might send a message to the federal courts that the TAMWG believes that Klamath augmentation flows should be part of Trinity ROD flows, and that no authorization exists for Reclamation to release those flows in addition to the Trinity ROD flows."

The last part of the meeting included a discussion of the SAB Phase I Review. I will consolidate the TAMWG's comments on this review and provide them to you by the end of the year.

Please let me know if you have any questions.

Sincerely,


Elizabeth Hadley, Chair
Trinity Adaptive Management Working Group



Trinity River Restoration Program

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NC-150

MEMORANDUM

TO: TMC and TAMWG Members

FROM: Robin Schrock, Executive Director
Trinity River Restoration Program

SUBJECT: Executive Director's Report

DATE: December 9, 2013

This report provides updates on all major Program activities since the September 2013 meeting. The most significant Trinity River Restoration Program (TRRP) activities since the September meeting are completion of the in-channel rehabilitation work at the Lorenz Gulch and Douglas City rehabilitation sites, with revegetation efforts continuing through the fall and winter.

Budget Update – The CR continues through January 15, 2014 with no indication of final congressional budget outcomes. A hiring freeze and travel restrictions remain in place. Any additional reductions that may result from a 2014 federal budget will need to be absorbed across the program through reductions in the rehabilitation project budgets and a lack of the ability to modify current agreements. Reclamation has migrated to the new DOI Financial and Budget Management System (FBMS) <http://www.doi.gov/pmb/fbms/overview/index.cfm>

Organizational Update

- TRRP reorganized work groups to address four major management actions available to the program to improve Trinity River fishery resources: Flow, Channel Rehabilitation (the Design Team), Gravel Augmentation (former Physical WG), Watershed, and Fish.
- The Interdisciplinary Team is still determining how they will help coordinate across technical work groups to meet specific information needs that may arise.
- TMC partners provided their staff member assignments to the new workgroups.
- Andreas Krause is now a Yurok Tribe Fisheries Department employee.

Implementation Update –

- NEPA - Environmental Compliance is being developed for Lower Junction City and Bucktail - Public Meeting, December 17th.

- Phase 2 Strategic Planning and Analysis is underway with an anticipated draft report end of January or first part of February

Science Update

- Phase I Review
The Science Advisory Board (SAB) released the draft *Review of the Trinity River Restoration Program's Channel Rehabilitation Strategy, Phase I* in mid-November. The report will be finalized after comments are received on January 17, 2014. Since the draft main report draws from the eight previously released appendices, the appendices were re-released for reference.

Public Outreach

- TRRP overview video is completed with final partner edits. We will be providing copies upon request as soon as the labels have been made.
- The Native Species of the Trinity River brochure was completed with special help from Steve Cannata and other partners who contributed photographs.
- The new interpretive signs at Sven Olbertson have been installed.



- TRRP staff met with landowners and other public stakeholders at two open houses on November 5 and 6, 2013 to preview the current design for 2014 rehabilitation projects at Lower Junction City and Bucktail. Attendance was very low at Junction City but in Lewiston there was broad participation from local landowners and fishing guides.

Save the Date

December 17, 2013 – Trinity County Library in Weaverville, 6:00-8:00 pm.

Public meeting for proposed sites for 2014 include Bucktail and Lower Junction City. Project information will be presented in accordance with the California Environmental Quality Act and National Environmental Policy Act. There will be a 30-day review period after the Draft EA/IS is issued.

Last week of January – A demonstration of a complete DSS, the Riverine Environmental Flow Decision Support System [REFDSS] has been arranged for the TRRP. It is built in a modular format to ensure that applying the framework in new river systems is relatively quick and that adding components (fish production, water quality) does not require a lot of programming.

FY2013 Proposed TRRP Program Budget

Summary by Program Activity	2011	2012	2012 Distribution	2013 Proposed	2013 Distribution
Program Administration	\$ 2,724,325.00	\$2,978,572	19.4%	\$2,897,846	18.9%
Rehabilitation Implementation	\$ 6,314,000.00	\$7,385,082	48.1%	\$7,385,000	48.3%
Science Program	\$ 5,689,940.00	\$4,996,346	32.5%	\$5,022,090	33%
TOTALS	\$ 14,728,265.00	\$15,360,000	100%	\$15,304,936	100%

FY2013 Funding Sources:	Projected	Proposed
1) USBR WR&R (A30)	\$ 14.10	\$ 11.38
2) USBR CVPIA (H37)	\$ 2.00	\$ 2.00
3) USFWS	\$ 1.98	\$ 1.98
TOTAL	\$ 18.08	\$ 15.36

Funding Sources:	2010*CR 12/09	2011*CR full yr	2012*CR 12/11	2013*CR 03/13
USBR Water & Related (A30)	\$ 11.82	\$ 12.85	\$ 10.38	\$ 11.38
USBR CVPIA (H37)	\$ 1.00	\$ 0.98	\$ 3.00	\$ 2.00
USFWS	\$ 2.11	\$ 0.97	\$ 1.98	\$ 1.98
TOTAL	\$ 14.93	\$ 14.80	\$ 15.36	\$ 15.36

10/16/2012



TRINITY RIVER RESTORATION PROGRAM

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MEMORANDUM

TO: TMC MEMBERS
FROM: WATERSHED WORKGROUP (ACTING COORDINATOR, ROBIN SCHROCK)
SUBJECT: TMC GUIDANCE ABOUT WATERSHED PROJECT PRIORITIES AND SCOPE
DATE: OCTOBER 23, 2013
CC: TAMWG, ALL TRRP WORKGROUPS

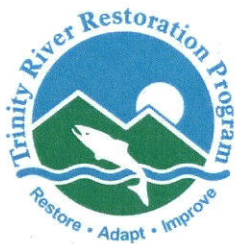
Watershed Workgroup members are requesting specific guidance and a decision from the TMC regarding the priority approaches and geographic scope of projects funded by the TRRP in cooperation with TRRP partners, cooperators and collaborating organizations. The group discussed the major means objective: Improve watershed condition to contribute to meeting TRRP fundamental objectives.

The two means objectives were: fine sediment reduction and fish habitat connectivity.

Does the TMC agree these objectives?

The TMC is also asked to give clear, specific guidance about the geographic scope of TRRP watershed projects.

Does the TMC agree to projects taking place in Trinity River tributaries?



Trinity River Restoration Program

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Memorandum

To: Robin Schrock, TRRP Executive Director

From: TRRP Design Team Work Group, through WG Coordinator DJ Bandrowski

Subject: Design Team Technical and Policy Guidance Request to the TMC and IDT

Date: December 12, 2012

At the TRRP Design Team Work Group (Design Team) conference call held on December 4, 2012, there was considerable discussion about potential risk of change in pool depth at Goat Hole contained within the Lorenz Gulch Channel Rehabilitation Site. There are various questions surrounding existing pool depths on the Trinity River mainstem that have been identified by the Design Team, stakeholders, and program partners that form the basis of our request for guidance to the Trinity Management Council (TMC). The questions have technical and policy/political related aspects and may need input from other technical workgroups through the facilitation of the Interdisciplinary Team (IDT). The questions identified for the TMC and IDT are listed below:

TMC

1. How should the Design Team incorporate stakeholder input into the design process with relation to setting goals and objectives?

IDT

2. Should the Design Team consider existing pools and adult holding habitat associated with these pools as a goal and objective within the channel rehab design process?
3. What are the biological and ecological considerations that Design Team should use in regard to existing pool and adult holding habitat? It is recommended that the fish workgroup take-up this issue.
4. How is adult holding habitat being affected by our management actions? It is recommended that the fish workgroup take-up this issue.
5. How are our management actions affecting physical attributes (depth, area, substrate, and topographic diversity) of adult holding habitat? It is recommended that the physical workgroup take-up this issue.
6. How do we revise the goal-setting process with regard to preservation of existing, high-quality habitat features?

The TRRP is in the process of developing quantitative information on pool evolution using bathymetric topography. Those preliminary analysis results will be available in early January and can be used to help inform some of the questions above.

The September 2010 MOU states that the "...workgroups are not responsible for resolving non-technical or policy issues", and the September 2010 Science Retreat developed a process flow chart for the TRRP to improve their decision-making process, including the role of policy and non-technical issues for the workgroups. Please refer back to this document for further clarification

Technical Workgroup Summary

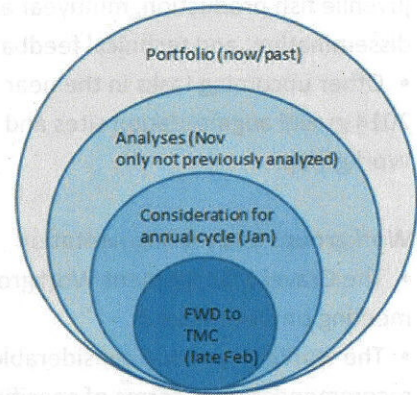
December 2013

Updates have been prepared by the Trinity River Restoration Program technical workgroup coordinators for the Trinity Management Council and the Trinity Adaptive Management Working Group.

Workgroup: Flow

Coordinator: Rod Wittler

- The Flow Work Group is preparing for the 2014 Flow Scheduling process on an accelerated schedule.
- The group began the process in June of 2013 with the establishment of the 2014 Flow Scheduling process (diagram) and solicitation of proposal for 2014 hydrographs.
- In August and November the group received and reviewed hydrograph proposals. On Nov 13, 2013, the group selected set of proposed hydrographs for analysis (see below).



Water Year Type	Selected Hydrographs	Source or Author
Extremely Wet	Extremely Wet-ROD Extremely Wet-Riparian Initiation	ROD James Lee
Wet	Wet-ROD Wet-Alt 1 Wet-Alt 2 Wet-Multi-peak 1 Wet-Multi-peak 2	ROD Andreas Krause Andreas Krause Seth Naman Seth Naman
Normal	Normal-ROD Normal-Multi-peak Normal-Joint Physical-Riparian Initiation	ROD Seth Naman Krause-Lee
Dry	Dry-ROD Dry-Multi-peak Dry-Joint Physical-Riparian Initiation Alt 2	ROD Seth Naman Krause-Lee
Extremely Dry	Extremely Dry-ROD	ROD

- The Flow Work Group and other workgroups are conducting analyses of the selected hydrographs. The group will evaluate the analyses and construct a decision tree for the TMC in late February which will include the group's reasoning for selecting a hydrograph for each of the 5 water year types.
- The group developed the following list of potential analyses for proposed hydrographs:
 1. Temperature Compliance
 2. Sediment Transport
 3. High Flow Gravel Augmentation – Gravel Augmentation Work Group
 4. Habitat
 5. Riparian Initiation & Recruitment
 6. Outmigrant Timing
 7. Construction Coordination – Design Work Group
 8. Monitoring Coordination
 9. Others? Special status species; Hydrograph variability (Intra-annual)
Annual variability (Inter-annual); Food availability

Workgroup: Fish**Coordinator: Seth Naman**

- The Fish Workgroup last met on November 6. The group continues to focus efforts on refining fish related means objectives and metrics to be utilized in the decision support system, and in order to realize the TRRP goal and fundamental objectives discussed at the May 22 objectives workshop. A new draft of the refined metrics will be shared with the IDT in their next call.
- The Fish Workgroup also discussed ideas for 2014 priorities for the group which included model support for juvenile fish production, multiyear analysis of existing monitoring data, and report writing to ensure timely dissemination, and technical feedback to other work groups.
- Other upcoming tasks in the near future include providing feedback to the gravel augmentation group on 2014 gravel augmentation sites and performing analyses to evaluate the flow alternatives proposed by the Flow Workgroup.

Workgroup: Gravel Augmentation**Coordinator: Robert Franklin**

- The Gravel Management Workgroup, newly formed consequent to recent TMC action, had its first full meeting on December 3.
- The workgroup made considerable progress toward development of a 2014 gravel augmentation recommendation in terms of specific locations, volumes and methods.
- By applying criteria associated with both direct ecological benefits and hypothesis testing, the workgroup chose four sites from among candidate locations: Weir Hole; Lewiston Cableway; Upper Lowden Meadows; and Grass Valley Creek confluence.
 - Potential methods to be employed at these sites vary from high-flow injections (dependent on wet water year types) to low-flow placements (not dependent on water year type).
 - Supporting analyses for final recommendations will be completed prior to the February meeting of the work group; a final recommendation will be forwarded to the TMC for approval at their March 2014 meeting.
- The workgroup discussed support for a five-year permit from the North Coast Regional Water Quality Board for the period 2015-2020. Development of information supporting the coming five-year permits for gravel augmentation appears feasible.
- A sub-group consisting of available work group members will develop for consideration by the full group a prioritized list of sediment-specific objectives bridging from the Integrated Assessment Plan.
- Underpinning technical information for a long-range plan is being developed.

Workgroup: Wildlife and Riparian**Coordinator: James Lee**

- The Workgroup held its last quarterly meeting on September 12. The group will meet on an as-needed basis in the future.
- Workgroup members met with SAB member Mike Merigliano, as well as with riparian ecologist Chris Hoag, to review riparian objectives, monitoring, and management methods.
- Workgroup members produced a draft document for TRRP review, the WY 2012 Riparian and Geomorphic Monitoring Report (IHAP).
- Workgroup members completed avian and herpetological monitoring for the 2013 field season and produced an avian monitoring summary report for 2013.
- A systemic cottonwood recruitment survey was performed in October, and other riparian mapping is ongoing.

Workgroup: Interdisciplinary Team

Coordinators: Ernie Clarke/DJ Bandrowski

- The Interdisciplinary Team holds monthly teleconferences.
- The group is primarily serving a coordination role.

Workgroup: Design

Coordinator: DJ Bandrowski

- The Bucktail (Hoopa Valley Tribe) and Lower Junction City (Federal) Designs are in progress and are approaching 80%-90% level, with anticipated final designs by end of January 2014.
- The Dutch Creek (State) project is currently at 30% design stage awaiting further input from the USFS NEPA process and on-site geophysical investigations.
- The Hatchery Channel Rehabilitation Reach (Yurok Tribe) is just starting on initial design concepts and will be proceeding throughout FY14.
- NEPA - Environmental Compliance is being developed for Lower Junction City and Bucktail (Public Meeting planned for December 17th).
- Phase 2 Strategic Planning and Analysis is underway with an anticipated draft report end of January or first part of February.
- Implementation construction for Summer 2014 will include Upstream Douglas City and Lower Junction City Channel Rehabilitation Projects.

Workgroup: Watershed

Coordinator: Robin Schrock

- The Watershed Workgroup developed a memorandum to the TMC asking specific questions regarding the objectives and scope of future TRRP watershed projects.
- The workgroup initialized a pre-proposal format for TRRP watershed project submissions.
- The workgroup reviewed 2015 pre-proposals and reached consensus that all submitted pre-proposals go to full proposals.
- Full 2015 TRRP Watershed Project proposals are due November 6, 2013 using the 2007 proposal form.

TRRP Invasive Plant Management Actions 2013

The purpose of this brief is to describe the TRRP actions designed to comply with Federal Executive Order 13112 – Invasive Species.

- **Monitoring**
 - NSR. 2007. Distribution and Applied Management of Invasive Plant Species at Proposed Rehabilitation Sites Along the Mainstem of the Trinity River
 - Annual Riparian Monitoring – covers post-construction monitoring
 - Pre-construction surveys at channel rehabilitation sites for NEPA/CEQA documentation
- **Revegetation**
 - Disturbed areas are planted in native vegetation at channel rehabilitation sites
 - Re-established native vegetation is expected to resist invasion by weeds
 - Mulching discourages weeds
 - Hand-weeding of select areas or species discourages weeds
 - Three year maintenance period after planting
- **Mulching/seeding**
 - Straw mulch is spread in disturbed areas after channel rehabilitation site construction
 - Straw is weed-free wheat straw
 - Non-persistent grass seed (typically wheat) is sown for rapid soil stabilization and to resist weed invasion
 - Perennial native grass and forb seed (multiple species) is sown for long-term soil stabilization and improvement, and to resist weed invasion
- **Contractor equipment cleaning**
 - Contractors are required to clean their equipment prior to transport to work sites

Trinity River Restoration Program (TRRP) – Phase II Implementation Planning & Analysis

Author: DJ Bandrowski, Implementation Branch Chief, Trinity River Restoration Program (TRRP)

Background: The TRRP has been implementing Channel Rehabilitation projects sites along the Trinity River's 40 mile restoration reach since 2005 under the authorization of the Record of Decision signed by Secretary of Interior in December 2000. The first phase of projects (Phase I) were implemented between 2005 and 2010 (Hocker Flat – 2005 and Lowden Ranch/Trinity House Gulch/Reading Creek – 2010). The Second Phase of implementation activities began in 2011 (Phase II) with the construction of the Wheel Gulch project. There are approximately five projects defined by specific Environmental Site Limits (ESL's) that has now been completed in Phase II with approximately 17 ESL's still remaining. A robust scientific review of the TRRP's Phase I Channel Rehabilitation projects was conducted during 2012/13 and draft results are still pending. More detailed background information can be found in the "Phase I Review" draft documents/analyses - provided upon request.

Purpose/Goal/Objective: To develop a comprehensive Phase II Implementation Plan that would guide the design and construction sequencing priorities of the remaining Phase II project sites or give rationale on if the program should go back to existing project sites for re-design. The plan would use a quantitative and statistical analysis approach to combine detailed 2D hydraulic modeling output parameters, key physical/ biological/ecological metrics, and a comprehensive logic model to evaluate temporal and spatial sequencing of remaining projects. The final product will be a report that identifies key analysis findings and recommendations for future project prioritization/sequencing rationale.

Scope: The analytical approach of the project will be the following:

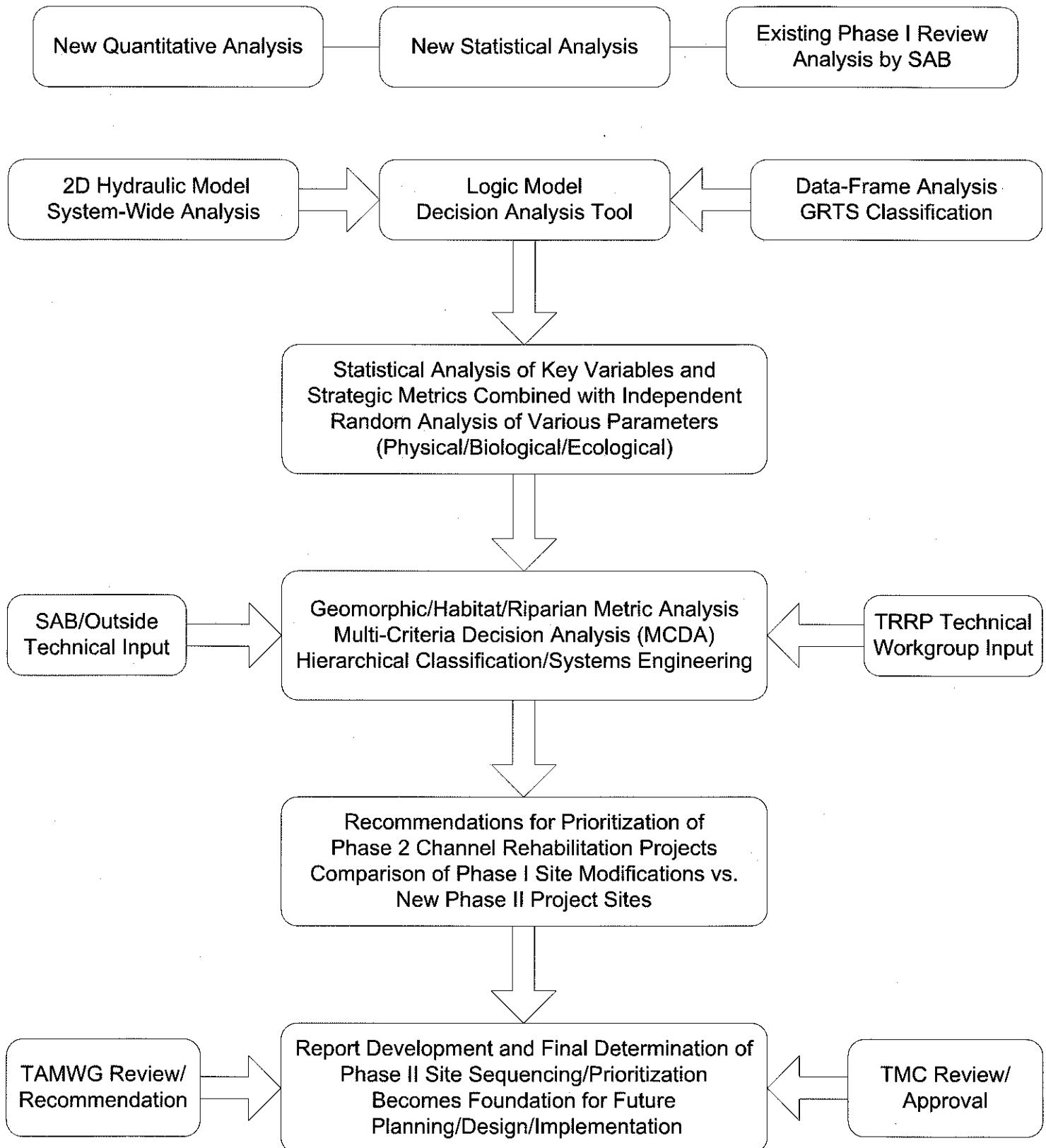
- 1) Build 2D hydraulic model of the 40 Mile Trinity River Reach using SRH2D and calibrate with surveyed ws profiles
- 2) Evaluate various key flows through the model and output various hydraulic parameters at 200meter segments
- 3) Evaluate key metrics for geomorphic process, rearing habitat (HSC), and riparian function at index flows using 2D system wide hydraulic model.
- 4) Statistically analyze and evaluate output data, metrics, and response variables through a robust "logic model":
 - Statistical relationships, correlation, trends, and comparisons between key response variables
 - hydraulic parameters in relation to other biological/physical/ecological factors and metrics
 - Ownership (public vs. private) with appropriate weighting factors
 - Height Above River Factors - Topography Constraints and Opportunities
 - Projects Cost/Benefit Ratio related to earthwork volumes – to reach a "desired condition"
 - Other Factors and analysis (structured decision making and multi-criteria decision analysis approach)
 - Phase I and II - Project Boundaries – Environmental Site Limits Spatial relationship
- 5) Use output from logic model to perform random and strategic statistical analyses to determine the optimal project sequencing and priority for future implementation or justification to go back to past project sites
- 6) Apply recommendations and document changes in approach through the adaptive management framework

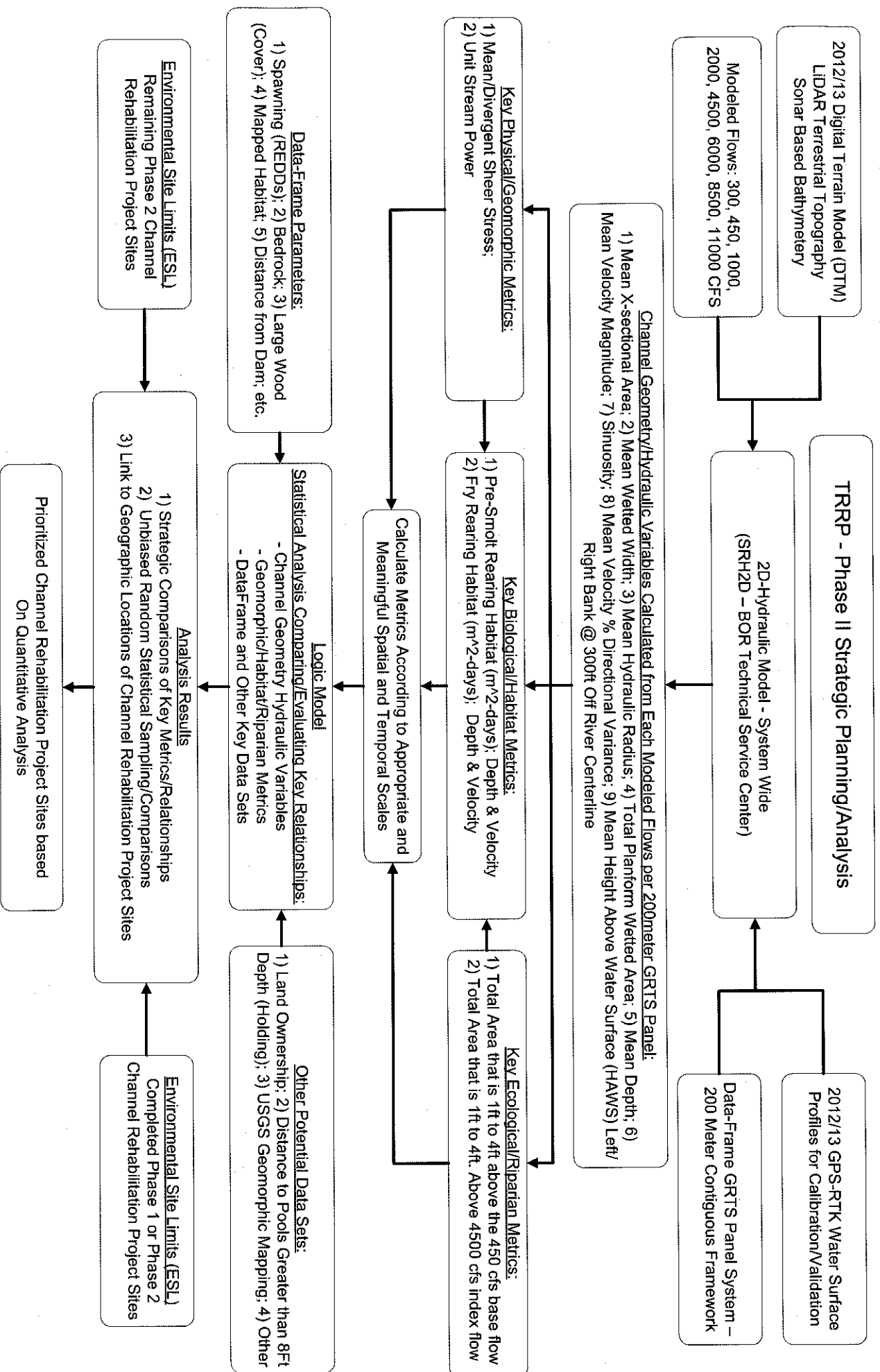
Timeline/Deliverables:

- Develop project approach and analysis plan – November/December 2013
- 2D Hydraulic Model Development –November / December 2013
- Logic Model Development –December/January 2013/2014
- Initial Internal /External Review – January/February 2014
- Logic Model and Statistical Analysis Results and Recommendations – January/February 2014
- Report development and summary of approach/methodologies – March 2014
- Report Review and Editing (Internal/External) –March/April 2014
- Final Recommendations by SAB & TAMWG / Approval by TMC – April/May 2014

TRRP Phase II Strategic Planning Process

Multi-Criteria Decision Analysis (MCDA) Prioritization





Phase II Strategic Planning and Analysis

- Model Flows: 300, 450, 1000, 2000, 4500, 6000, 8500, 11000 CFS
- Note: All Variables Calculated for Each Modeled Flows per 200meter GRTS Panel

General Channel Geometry/Hydraulic Variables:

- 1) Mean X-sectional Area
- 2) Mean Wetted Width
- 3) Mean Hydraulic Radius
- 4) Total Plan-form Wetted Area
- 5) Mean Depth
- 6) Mean Velocity Magnitude
- 7) Sinuosity
- 8) Mean Velocity % Directional Variance
- 9) Mean Height Above Water Surface (HAWS) Left/Right Bank @ 300ft Off River Centerline

Key Physical/Geomorphic Metrics:

- 1) Mean/Divergent Sheer Stress
- 2) Unit Stream Power

Key Biological/Habitat Metrics:

- 1) Pre-Smolt Rearing Habitat (m^2 -days); Depth & Velocity HSC
- 2) Fry Rearing Habitat (m^2 -days); Depth & Velocity HSC

Key Ecological/Riparian Metrics:

- 1) Total Area that is 1ft to 4ft above the 450 cfs base flow
- 2) Total Area that is 1ft to 4ft. Above 4500 cfs index flow

Existing Data-Frame Variables:

- 1) Spawning (REDDs)
- 2) Bedrock
- 3) Large Wood (Cover)
- 4) Mapped Habitat
- 5) Distance from Dam
- 6) River Mile
- 7) Riparian Berm Location
- 8) Carcass data

Other Potential Data or Variables

- 1) Land Ownership
- 2) Distance to Pools Greater than 8Ft Depth (Holding)
- 3) USGS Geomorphic Mapping
- 4) Other

Final Relationship for Prioritization

Environmental Site Limit - ESL (Project Boundaries)



TRINITY RIVER RESTORATION PROGRAM

P.O. BOX 1300, WEAVERVILLE, CA
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MEMORANDUM

TO: GRAVEL AUGMENTATION WORK GROUP
FROM: ROBIN SCHROCK
CC: ERNIE CLARKE, DJ BANDROWSKI, TMC
SUBJECT: POTENTIAL APPROACHES TO DEVELOPING UPDATED GRAVEL
AUGMENTATION PLAN
DATE: NOVEMBER 1, 2013

The Trinity River Restoration Program has recently reorganized technical workgroups to better address those management actions available to the program to effect geomorphic change in the river to increase fish habitat. One of those approaches, gravel augmentation, is being revisited by your newly formed work group based on a request by the Trinity Management Council. Multiple factors have influenced coarse sediment dynamics in the river since the last gravel augmentation plan was released in 2007: TRRP actions including variable restoration flows, in-channel rehabilitation, watershed activities to manage fine sediment, and gravel augmentation, among others. In addition to the management actions the TRRP implemented, other influences including different water year types, tributary flows, delta accretion, changes in land use practices, wildfires in the basin, and a myriad of other factors further influenced the condition of the river.

The 2007 plan provides a broad basis for developing new, adaptive management gravel augmentation protocols, based on current river conditions, and those that can feasibly be projected into the future. Due to the short time frame for providing the TMC with an updated gravel augmentation plan, I identify some data needs for the update, suggest assessments to inform the plan based on annual changes in adaptive management approaches and ambient river conditions, and suggest analyses to inform short-term and long-term gravel augmentation. These potential approaches to updating TRRP coarse gravel management are offered as a contribution to integrating gravel augmentation with other program management actions, and recognize that our projections of future conditions and therefore long-term planning need to reflect constantly changing conditions in the river.

Current conditions:

- Map site specific locations of coarse gravel deficit in relation to coarse sediment sources – are these data readily available, are they precise enough for modeling/projection purposes?
- Identify factors contributing to the deficit from observed changes at specific sites: flow history, local sediment sources/sinks, geomorphology of channel, local land use, etc.
- Project probability of chronic gravel deficits at specific sites under a range of restoration flows and significant storm events at specific locations.
- Reassess annual augmentation sites contributing to long-term deficit mitigation.

Monitoring and assessment:

- Determine if current monitoring sites are providing adequate information for site specific and system wide coarse sediment flux assessments for annual (short-term) and long-term adaptive decisions.
- Develop protocol for monitoring fate of injected gravel based on available models.
- Reassess locations of gravel deficiency after significant flow events (determine those from activities above).

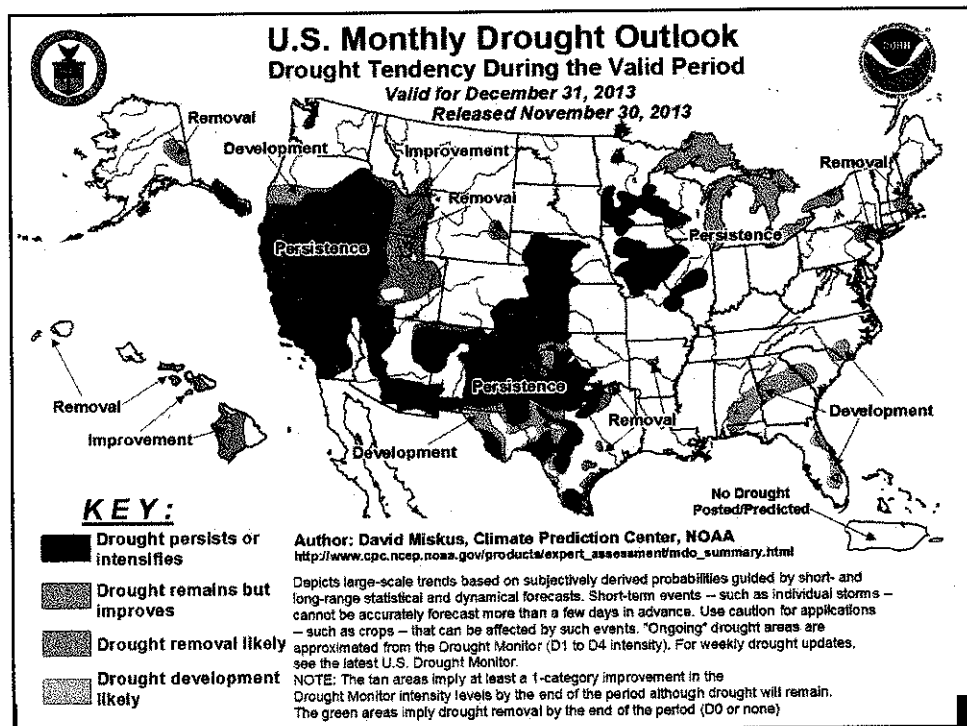
Analyses:

- Project fate of injected and low flow gravel placements (and test transport models).
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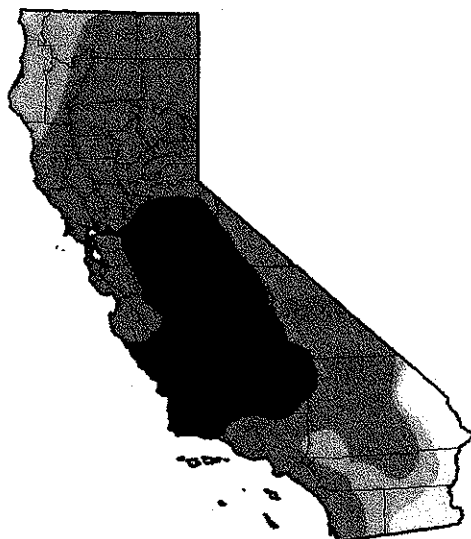
2014 Trinity River Flow Scheduling

TAMWG Meeting
10 December 2013



U.S. Drought Monitor California

December 3, 2013
(Released Thursday, Dec. 5, 2013)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	2.61	3.24	11.82	54.94	27.59	0.00
Last Week 11/26/2013	2.61	3.24	11.82	54.94	27.59	0.00
3 Months Ago 9/3/2013	0.00	2.92	4.15	91.58	11.36	0.00
Start of Calendar Year 1/1/2013	31.75	12.93	32.92	22.50	0.00	0.00
Start of Water Year 10/1/2012	2.63	1.42	11.83	72.77	11.36	0.00
One Year Ago 12/4/2012	23.15	17.49	32.76	28.54	0.05	0.00

Intensity

D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

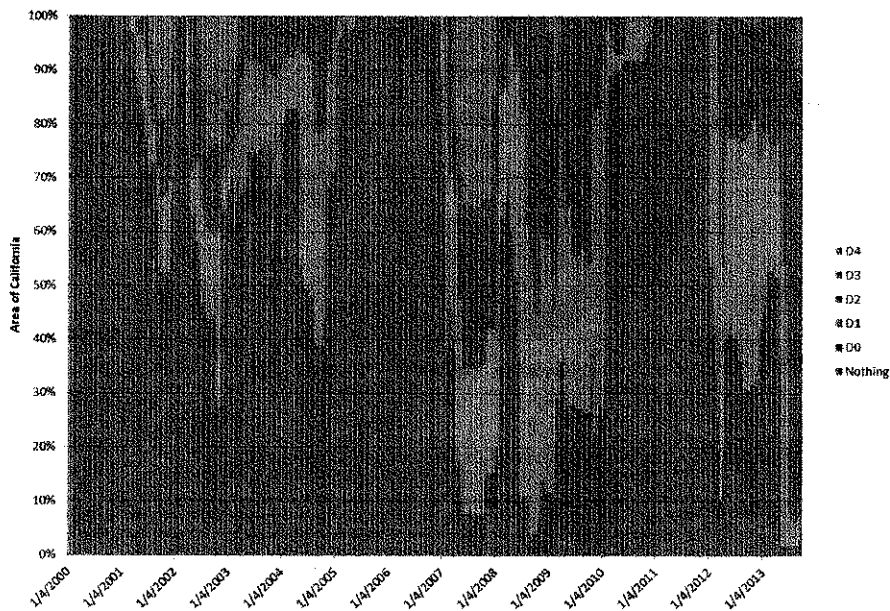
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

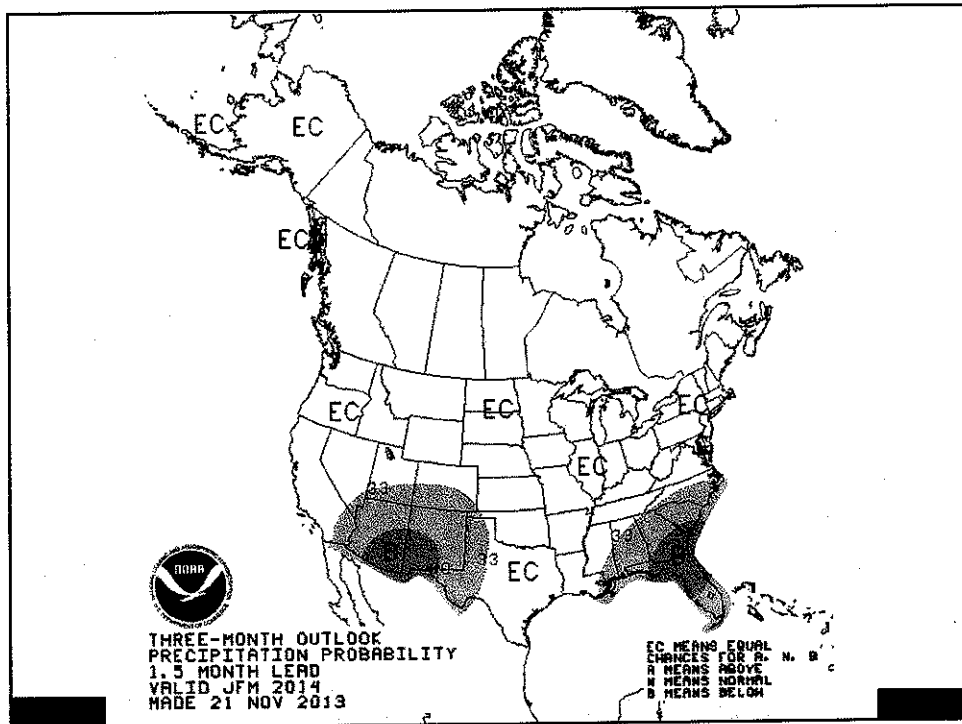
Author:
Michael Brewer
NCDC/NOAA



<http://droughtmonitor.unl.edu/>

California Drought Index



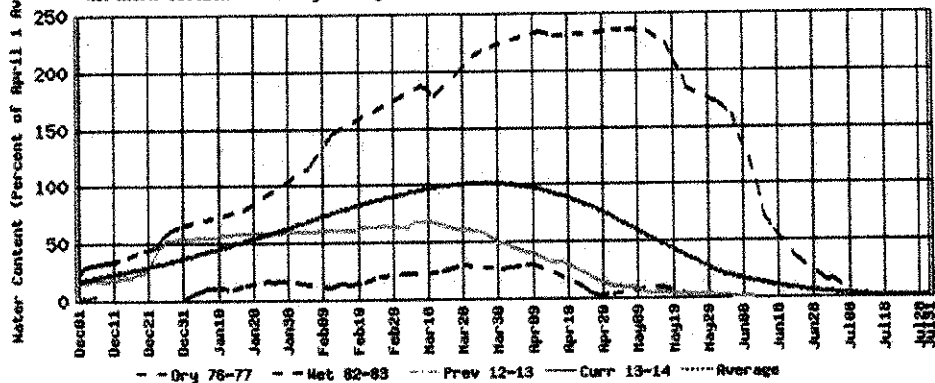


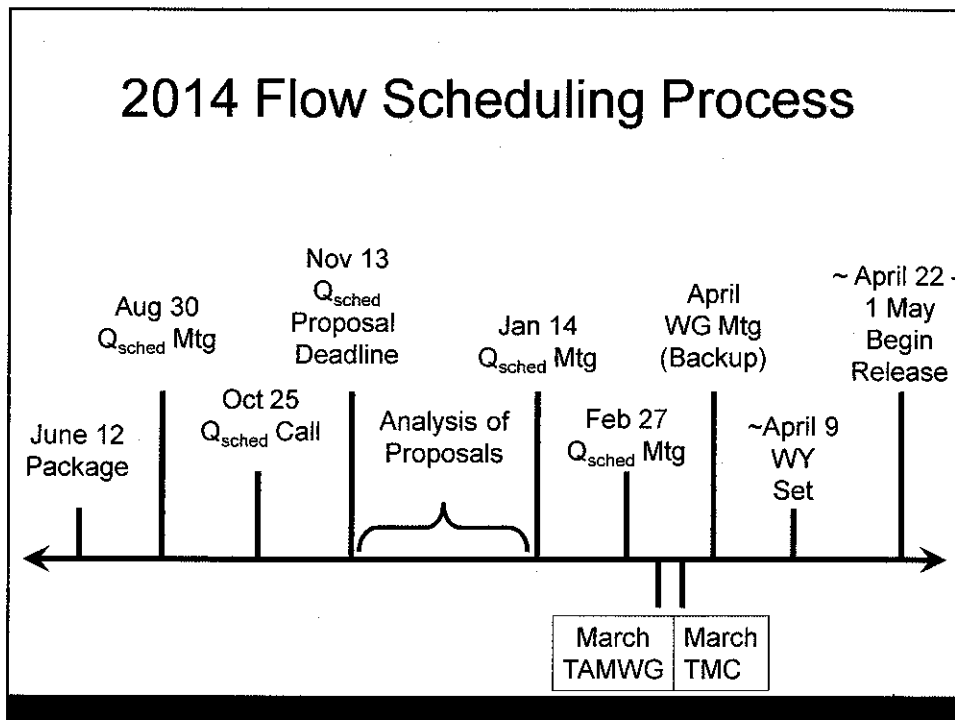
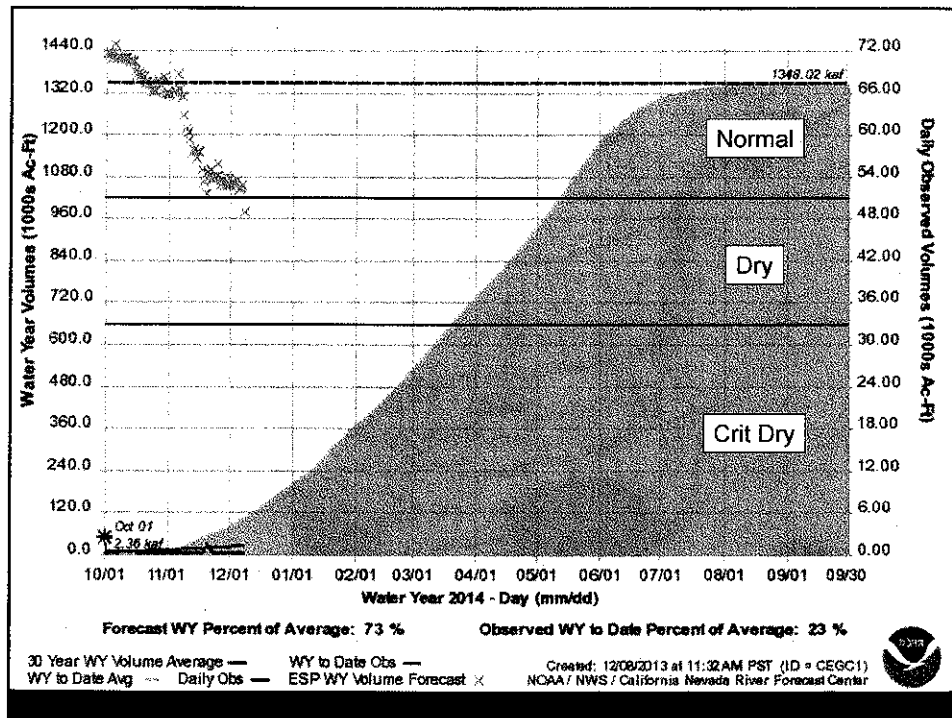
California Snow Water Content

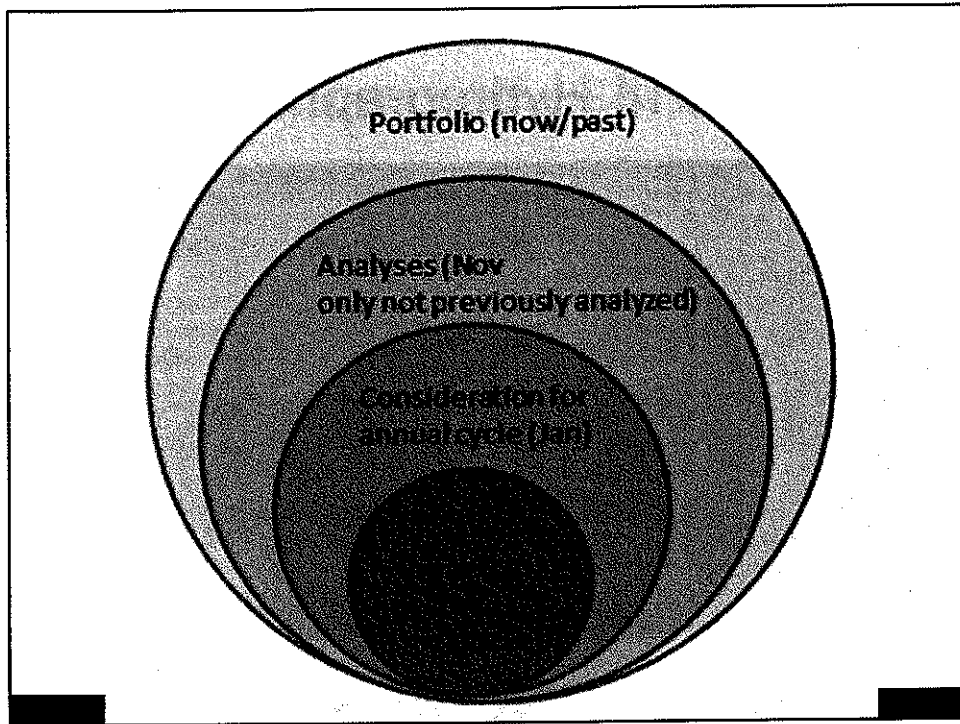
California Snow Water Content

PERCENT OF APRIL 1 AVERAGE, DECEMBER 06, 2013

Northern Section - Trinity through Feather & Truckee





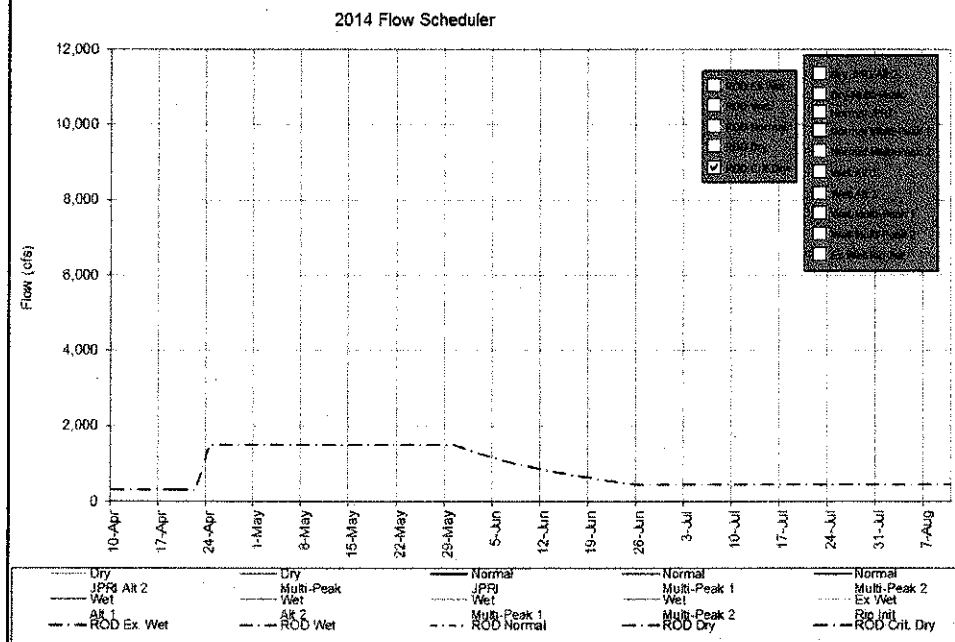


Portfolio	Abbreviated Restoration Flow Release Portfolio																																																
	The purpose of this document is to improve TRAP Restoration Flow Hydrograph Recommendations beginning with water year 2014, by providing an abbreviated portfolio of past hydrographs. Only a brief summary of each hydrograph is provided; these may be more broadly documented in future years. The portfolio initially includes those hydrographs that have been enacted, starting with Water Year 2004, plus some hydrographs never enacted, but that were developed under prior flow scheduling processes and have some degree of analyses completed. Compiled by Eric Peterson Last saved 9/23/2013 3:30 PM by Eric Peterson																																																
	Contents <table> <tr><td>Standard Tables</td><td>1</td></tr> <tr><td>Extremely Wet Year Hydrographs</td><td>1</td></tr> <tr><td> ROO, Extremely Wet</td><td>1</td></tr> <tr><td>Wet Year Hydrographs</td><td>3</td></tr> <tr><td> ROO, Wet</td><td>3</td></tr> <tr><td> 11,000 cfs, Wet (WY2011)</td><td>3</td></tr> <tr><td>Normal Year Hydrographs</td><td>7</td></tr> <tr><td> ROO, Normal</td><td>7</td></tr> <tr><td> Veg Modified, Normal (WY2008)</td><td>9</td></tr> <tr><td> Riparian Descending Limb, Normal (WY2012)</td><td>10</td></tr> <tr><td> Riparian/Wildlife Peak plus Monitoring, Normal (WY2010)</td><td>12</td></tr> <tr><td> 7000 cfs Model Calibration, Normal (WY2005)</td><td>13</td></tr> <tr><td> Joint Physical-Riparian, Normal</td><td>14</td></tr> <tr><td>Dry Year Hydrographs</td><td>15</td></tr> <tr><td> ROO Dry (WY2007)</td><td>15</td></tr> <tr><td> Monitoring Benches Dry (WY2009)</td><td>17</td></tr> <tr><td> Spring Habitat Bench, Dry (WY2013)</td><td>18</td></tr> <tr><td> Joint Physical-Riparian Alt 1, Dry</td><td>19</td></tr> <tr><td> Joint Physical-Riparian Alt 2, Dry</td><td>20</td></tr> <tr><td>Critically Dry Hydrographs</td><td>22</td></tr> <tr><td> ROO, Critically Dry</td><td>22</td></tr> <tr><td>Constrained Hydrographs</td><td>23</td></tr> <tr><td> Infrastructure Constrained, Extremely Wet (WY2006)</td><td>23</td></tr> <tr><td> Volume Constrained, Normal (WY2004)</td><td>24</td></tr> </table>	Standard Tables	1	Extremely Wet Year Hydrographs	1	ROO, Extremely Wet	1	Wet Year Hydrographs	3	ROO, Wet	3	11,000 cfs, Wet (WY2011)	3	Normal Year Hydrographs	7	ROO, Normal	7	Veg Modified, Normal (WY2008)	9	Riparian Descending Limb, Normal (WY2012)	10	Riparian/Wildlife Peak plus Monitoring, Normal (WY2010)	12	7000 cfs Model Calibration, Normal (WY2005)	13	Joint Physical-Riparian, Normal	14	Dry Year Hydrographs	15	ROO Dry (WY2007)	15	Monitoring Benches Dry (WY2009)	17	Spring Habitat Bench, Dry (WY2013)	18	Joint Physical-Riparian Alt 1, Dry	19	Joint Physical-Riparian Alt 2, Dry	20	Critically Dry Hydrographs	22	ROO, Critically Dry	22	Constrained Hydrographs	23	Infrastructure Constrained, Extremely Wet (WY2006)	23	Volume Constrained, Normal (WY2004)	24
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2014 Hydrographs

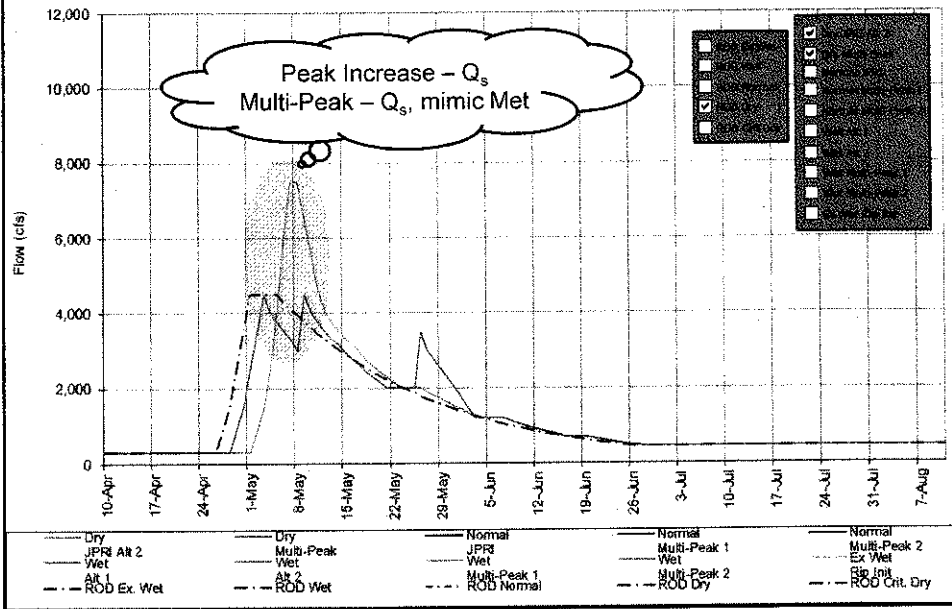
Water Year Type	Selected Hydrographs	Author
Extremely Wet (EW)	Extremely Wet-ROD	ROD
	Extremely Wet-Riparian Initiation	James Lee
Wet (W)	Wet-ROD	ROD
	Wet-Alt 1	Andreas Krause
	Wet-Alt 2	Andreas Krause
	Wet-Multi-peak 1	Seth Naman
	Wet-Multi-peak 2	Seth Naman
	Normal-ROD	ROD
Normal (N)	Normal-Multi-peak 1	Seth Naman
	Normal-Multi-peak 2	Seth Naman
	Normal-Joint Physical-Riparian Initiation	Krause-Lee
	Dry-ROD	ROD
Dry (D)	Dry-Multi-peak	Seth Naman
	Dry-Joint Physical-Riparian Initiation Alt 2	Krause-Lee
	Extremely Dry-ROD	ROD

Flow Schedule Proposals (Crit Dry)



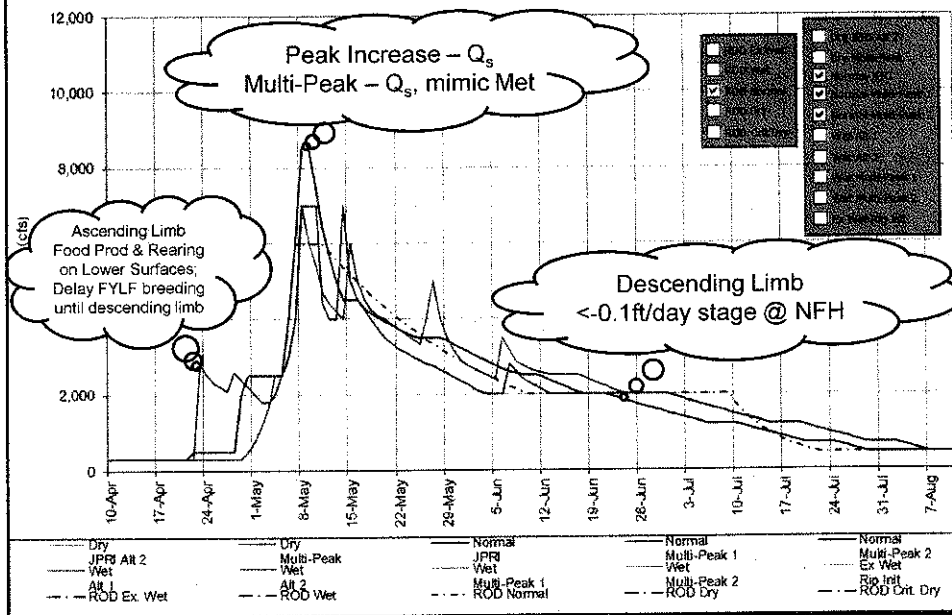
Flow Schedule Proposals (Dry)

2014 Flow Scheduler

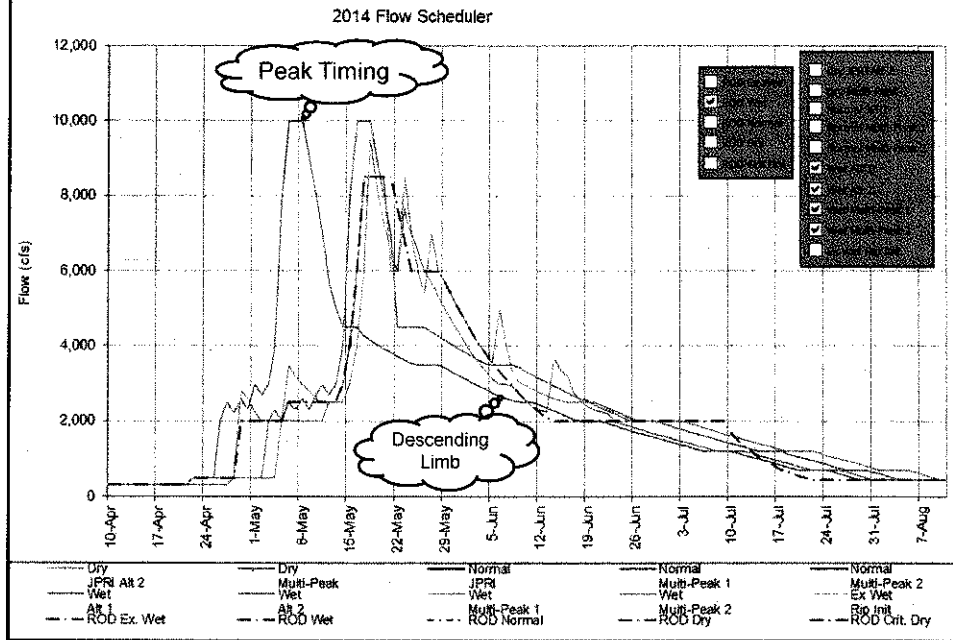


Flow Schedule Proposals (Normal)

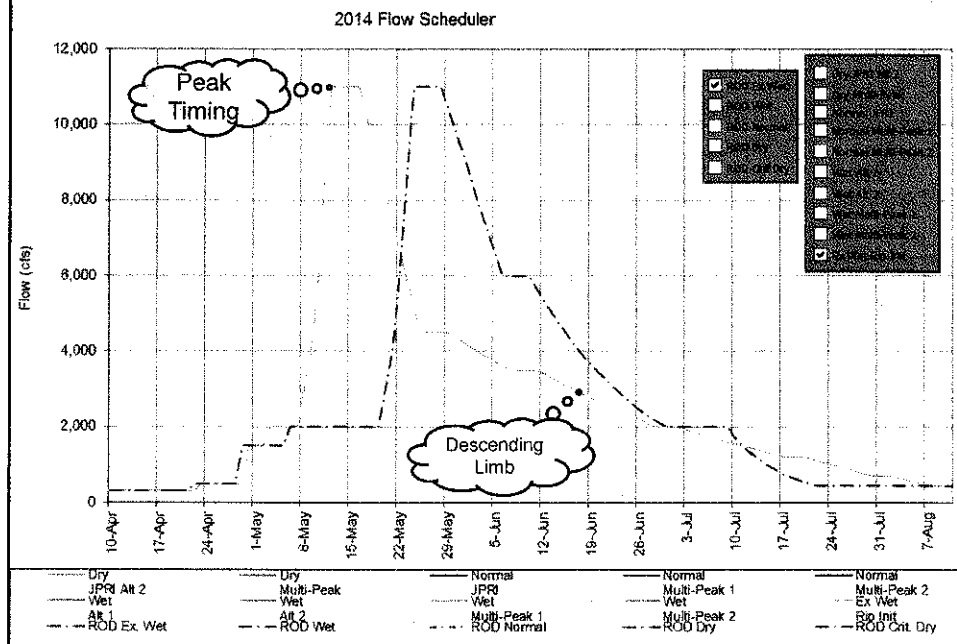
2014 Flow Scheduler



Flow Schedule Proposals (Wet)



Flow Schedule Proposals (Ex Wet)



Potential Analyses

- Temperature Compliance
- Sediment Transport
- High Flow Gravel Augmentation – Gravel Augmentation WG
- Habitat
- Riparian Initiation & Recruitment
- Outmigrant Timing
- Construction Coordination – Design WG
- Monitoring Coordination
- Others
 - Special status species
 - Hydrograph variability (Intra-annual)
 - Annual variability (Inter-annual)

Next Meetings of the Flow Workgroup

- 14 Jan 2014 - Purpose is to review analyses in light of developing WY type
- 27 Feb 2014 - Purpose is to determine which hydrographs to forward as well as prepare decision tree for single hydrograph for each water year type
- Early March 2014 - Forward WG Hydrograph recommendation to TMC & TAMWG

RECLAMATION

Managing Water in the West

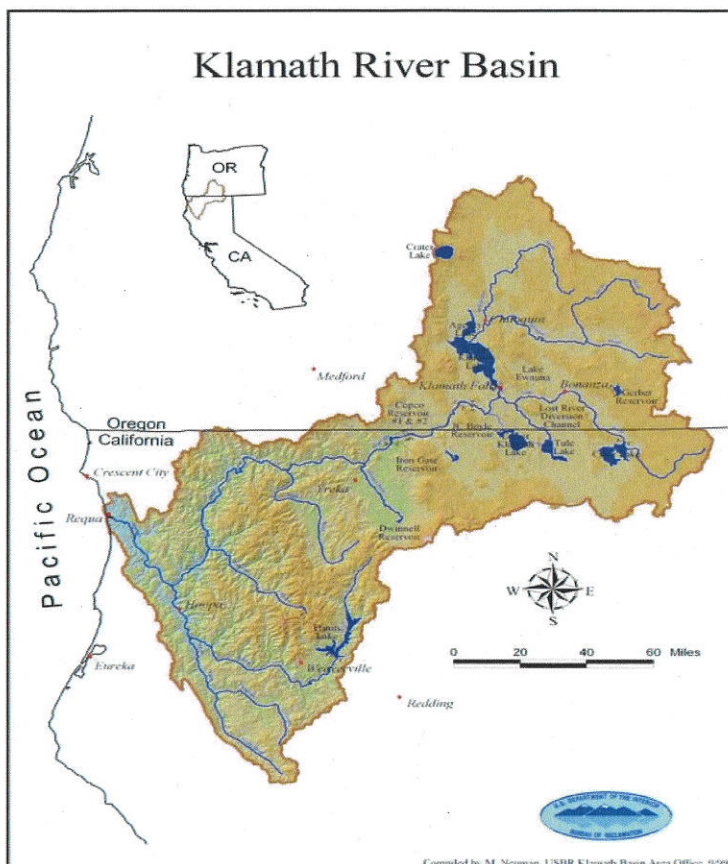
Klamath River Basin Study

Contacts:

Michelle Denning: (916) 978-5062

Arlan Nickel: (916) 978-5061

Bureau of Reclamation, Oregon's Water Resources Department, and California's Department of Water Resources are partnering to conduct the Klamath River Basin Study to identify strategies to meet current and future water demands in the Basin. The Klamath River Basin straddles the boundary between the states of California and Oregon and covers approximately 12,100 square miles. The basin originates east of the Cascade Mountain Range in Oregon and extends southwest into California where the Klamath River flows into the Pacific Ocean. The Klamath River Basin has become a focal point for local, regional, and national discussions on water management and water scarcity due to imbalances between water supplies and demands.



Employing broad stakeholder involvement, the Klamath Basin Study will accomplish the following objectives:

- Evaluate supply and demand imbalances in the basin which may be exacerbated by climate change;
- Identify possible impacts to the Basin's agricultural water requirements, hydroelectric facilities, recreational facilities, fish and wildlife habitats, flood control facilities, and water storage and distribution facilities; and
- Develop both structural and non-structural adaptive strategies to balance supplies with demands.

Stakeholder involvement in the Study includes a broad spectrum of Klamath tribal governments, water user groups, agriculture associations and environmental interests. The total cost of the Klamath Basin Study is \$1.85 million with a 50/50 cost share between Reclamation and the States of California and Oregon.



U.S. Department of the Interior
Bureau of Reclamation



TRINITY RIVER RESTORATION PROGRAM

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

MEMORANDUM

TO: GRAVEL AUGMENTATION WORK GROUP
FROM: ROBIN SCHROCK
CC: ERNIE CLARKE, DJ BANDROWSKI, TMC
SUBJECT: POTENTIAL APPROACHES TO DEVELOPING UPDATED GRAVEL
AUGMENTATION PLAN
DATE: NOVEMBER 1, 2013

The Trinity River Restoration Program has recently reorganized technical workgroups to better address those management actions available to the program to effect geomorphic change in the river to increase fish habitat. One of those approaches, gravel augmentation, is being revisited by your newly formed work group based on a request by the Trinity Management Council. Multiple factors have influenced coarse sediment dynamics in the river since the last gravel augmentation plan was released in 2007: TRRP actions including variable restoration flows, in-channel rehabilitation, watershed activities to manage fine sediment, and gravel augmentation, among others. In addition to the management actions the TRRP implemented, other influences including different water year types, tributary flows, delta accretion, changes in land use practices, wildfires in the basin, and a myriad of other factors further influenced the condition of the river.

The 2007 plan provides a broad basis for developing new, adaptive management gravel augmentation protocols, based on current river conditions, and those that can feasibly be projected into the future. Due to the short time frame for providing the TMC with an updated gravel augmentation plan, I identify some data needs for the update, suggest assessments to inform the plan based on annual changes in adaptive management approaches and ambient river conditions, and suggest analyses to inform short-term and long-term gravel augmentation. These potential approaches to updating TRRP coarse gravel management are offered as a contribution to integrating gravel augmentation with other program management actions, and recognize that our projections of future conditions and therefore long-term planning need to reflect constantly changing conditions in the river.

Current conditions:

- Map site specific locations of coarse gravel deficit in relation to coarse sediment sources – are these data readily available, are they precise enough for modeling/projection purposes?
- Identify factors contributing to the deficit from observed changes at specific sites: flow history, local sediment sources/sinks, geomorphology of channel, local land use, etc.
- Project probability of chronic gravel deficits at specific sites under a range of restoration flows and significant storm events at specific locations.
- Reassess annual augmentation sites contributing to long-term deficit mitigation.

Monitoring and assessment:

- Determine if current monitoring sites are providing adequate information for site specific and system wide coarse sediment flux assessments for annual (short-term) and long-term adaptive decisions.
- Develop protocol for monitoring fate of injected gravel based on available models.
- Reassess locations of gravel deficiency after significant flow events (determine those from activities above).

Analyses:

- Project fate of injected and low flow gravel placements (and test transport models).
 - Revisit monitoring if models prove inadequate.
- Project locations of gravel deficiency after significant flow events through analyses using monitoring data.
- Determine sequence of WY/restoration flow releases that trigger reassessment.
- Determine rehabilitation/restoration actions that affect gravel flux.
- Ultimately develop geospatial systems-model that characterizes sediment flux at monitoring/identified deficit locations, with accompanying transport model(s).