

MEETING SUMMARY, MARCH 28, 2013

Meeting Summary

FLOW WORKGROUP

TRRP Office, Weaverville, CA

March 28, 2013

Participants

Technical members: Eric Peterson (TRRP, Coordinator); Rod Wittler (TRRP); Eric Wiseman (USFS); George Kautsky (Hoopa Valley Tribe); Joe Polos (USFWS); Tim Hayden (Yurok Tribal Fisheries); Seth Naman (NOAA Fisheries). Via Webex: Teresa Conner (DWR); Wade Sinnen (CDFW); Andrew Jensen (CDFW)

Other participants: Robin Schrock, Ernie Clarke (TRRP/USFWS) and; James Lee (TRRP/Hoopa Tribal Fisheries), Robert Franklin (Hoopa Valley Tribal Fisheries); Bill Brock (USFS); Aaron Martin (Yurok Tribal Fisheries), Shane Quinn (Yurok Tribal Fisheries), Connor Shea (USFWS); Sean Ledwin (Hoopa Tribal Fisheries); Melissa Snover (USGS); Bryson Swart (NOAA Fisheries); Via Webex: John Bair, Scott McBain (McBain and Trush/HVT consultants).

Note taker: Jeanne McSloy (TRRP)

List of Action Items Developed at the Meeting

Action Item: Aaron Martin and Connor Shea will complete the new proposed hydrograph for the Flow Regime by COB tomorrow.

Summary Meeting Notes by Agenda Items

Introductions-Review/Approve Agenda-Review Action Items

Peterson welcomed the group and started with introductions. The *Levels and Nature of Agreement and Disagreement* memo was passed out and shown, and the group was asked to take a minute to read through it. Clarke went over the Consensus definition points. Peterson briefly went over the Action Tracker items and pointed out that the tasks labeled "outstanding" are ongoing. Peterson showed a slide of the 2013 Flow Scheduling Process and went over the future schedule.

March 2014 Current Conditions Update

Wittler showed the Water Year History slide as a reference, followed by the CA snow water content graph percent of April 1 average, March 27, 2013. He said it does not appear we will approach normal conditions this year. Wittler then showed the US Drought Monitor for March 19, 2013, which forecasts that the drought may be moderating, followed by the 5-day forecast (to get through the end of the month) for Weaverville; there is no chance current conditions will change the trend. Wittler showed the Daily CVP water supply report and highlighted the Trinity Reservoir; his estimate is that it is in very good shape right now. As of today his projection is that the water year type will be dry. Rod next showed the NOAA three month outlook precipitation probability, followed by the Forecast WY percentage of average (this is a new item). This is the total inflow for Trinity basin for the water year. It shows that we have fallen significantly below average since December. Wittler then showed the NWS CNRFC Trinity Inflow Forecast (EPS) graph. He said the old forecast is performing well compared with the

new daily one. We are looking at around 900,000 acre-feet for the year. The next forecast will come out on April 9th. Any impact of storms occurring up through Sunday March 31st was discussed. The next March B2 forecast from Central Valley Operations (CVO) was briefly discussed. Wittler said we are tracking closer to the 90% level than the 50% level. The ROD recommended flow releases (5 water year types) slide was shown.

2013 Flow Scheduling Proposals

Shea, a representative of the Physical Workgroup, began the presentation with the 2013 alternate hydrograph proposals. He showed a slide of the 2013 Flow Release Schedule and gave the history of how the proposal was developed. The dry hydro has a 5-day peak, whereas the alternative is a 2-day peak of 7500 cfs with recessional benches where flow is held steady for 4 days at 1,200 and 700. He showed a slide of the goals and objectives in proposing these changes. Key item: a normal year is not transporting nearly as much sediment as they thought it would. Another concern is that the amount of normal year sediment movement is dropping off; the reason for this is not yet known. He explained the motivation for his proposal for this year: part of the coarse sediment transport goal is to move sediment on the river and inform geomorphic features. Since big events like the 11,000 cfs peak flow have moved sediment, that is one of the reasons for pushing for larger releases. The goal is not to maximize sediment transport but to move enough coarse sediment to accomplish the goals for the river. We are trying to move more sediment because not enough has been moving but a complete investigation is needed.

Shea then briefly discussed maintenance of the deltas. Although this has been a dry year above the Trinity, it has been a wet year in the tributaries. A bigger argument for this release is that we need a punch to get that gravel out of the tributaries and move aggraded material. He recommends a 7500 cfs peak flow to accomplish that. A hydrograph of Trinity below Limekiln Gulch near Douglas City was shown. In terms of bedload discharge, the point is that sediment moves in the first two days of peak release, then it drops off. The 5-day releases were not moving much sediment during the final 3 days, so it would be more effective to distribute that water; this is why you see the 2-day peak.

Martin discussed the utility of this proposal in terms of habitat monitoring. Monitoring obj include flow to habitat mapping at specific rehab sites. He outlines what they will be doing Going back to upper dark gulch due to significant amounts of change seen since then and potential utility in terms of future designs. They propose doing a 2D Habitat and Hydraulic modeling exercise at a future rehab site, Lewiston Hatchery, which will start in January of next year. There is potential for taking their model and turning it into a sediment transport model, to estimate habitat. The benches are to allow them to get water surface elevations. They would like to see as high a peak as possible to better calibrate their model. Shea pointed out that 7500 cfs puts water up on floodplain, which extends the validity of the model especially for higher flow. The benefits of a 7500 cfs peak flow for fish versus geomorphic and other purposes was discussed. Shea presented concerns with this proposal and clarified that this is a recommendation for this year only. It was decided that the group would focus on physical issues for now, biological issues later in the meeting. Scott McBain added that sediment transport rates are not an objective; they need a different objective on the order of active coarse sediment storage or a better index that translates into habitat complexity or habitat quantity. A concern is that if we do a lot of geomorphic work, over the last few years gravel augmentation has declined, so if we transport more and augment less, we should expect bed coarsening, loss of storage and reduced transport rates. His worry is that we are taking the "more transport is good" path without understanding how that translates into more complexity, and doing that in a dry year. Shea clarified the way hydrographs affect gravel augmentation, which lead to a discussion of the hydrographs being considered and the process of making changes to them.

Discussion of Temperature Model Results (Dry)

Wittler presented the Temperature Model results and briefly explained the modeling process. We are in a dry year. He said that these are the coldest temperatures we have ever seen on the Trinity, and discussed possible reasons for this. Since according to CVO we are tracking closer to the 90% than the 50%, they will export more water, so Lewiston is going to be colder. Wittler said he feels good about the temperature forecast for this year, and that we will be able to maintain temperatures because of the cold water coming out of the Trinity. Output for the River was shown; of the three dry year alternatives, for average weather things look good, but if there is extreme weather there will be problems, as expected. It was pointed out that synthetic years are used for this model. The forecasts and deliveries needed at Whiskeytown were briefly discussed.

Break

Public Technical Input Q&A

No members of the public were present so this section was skipped.

Technical Discussion of Hydrographs-Benefits/Concerns

Peterson went over comments received by email (*attached below*), beginning with comments from McBain. Peterson briefly went over the differences between dry and critically dry years in the flow study; the concern being raised is that we are bringing a hydrograph that has a peak that mimics the higher level of a wetter water type than the ROD default. Kautsky expressed concern over the fact uncertainties have not been identified and he feels there are many. Shea said that despite the big range of uncertainties, higher peaks mean more sediment transport; the goal was moving more sediment to create more bar building. ROD flows represent the management for a reconstructed river; if higher flows help build bar features and sediment coarse features up, we need to get those in now and allow the ROD regime to manage the system.

McBain commented on the riparian encroachment risk. Martin said that the question for him is what hydrograph is best for the river this year. He suggested considering what could happen that we don't want to happen at 7500 cfs? Franklin said we are required in the annual experiment to come up with predictions that are quantitative, measured, gain information, and are always associated with a Primary management objective (means objective). Kautsky said that rather than just looking at what is best for the river this year, we need to consider the next 100 years; we are missing it in these alternatives because we have not fully exhausted the ROD goals. Repeatedly focusing on what is best for this year will derail the track of restoration philosophy, to see the ecological reasons for the recurrence of various water year types. Schrock said Martin has proposed an experiment, which would be a first, and is in line with what the SAB suggested we do. Peterson said with adaptive management there is room to shift the peaks we have.

Wittler said the long term view is as important as the short term. He believes we are in the first year of a drought, so we need to think of how this year's strategy could fit into a potentially several year drought cycle. Kautsky said we are constrained by volume, not by peak and challenged the group to describe what are influences on the peak values; what is lacking in the proposal is building out uncertainties and potential risks. It is not just transport but also flow, which is a function of availability and supply; we need to talk about those confounding variables and uncertainties before we depart from the long-term vision of the ROD. Shea added that another factor is what are the tributaries are doing, which is a confounding factor this year.

Bair pointed out that this conversation is focused on the physical rather than ecological benefits of a dry year and suggested the river might benefit from a year of rest through increased avian, frog, lamprey benefits. Martin asked which are more important this year, ecological or geomorphic benefits? We are focused geomorphically on two points on the river, but all 40 miles are impacted. What are the tradeoffs? Franklin said that he is inclined to think that gravel addition is still needed. He is strongly of the opinion we have learned that the natural hydrograph of the Trinity River indicates variability in flows across a range from critically dry to extremely wet years and is resolute to an annual experiment oriented to information needs. Franklin said that at this point in the discussion he is in category D relative to the 7500 cfs release.

Biology

Tim Hayden presented the Fish workgroup's comments to the flow work group:

- *We anticipate a strong year-class of emergent salmon and steelhead fry as a result of high 2012 adult escapement and assumed spawning and incubation success.*
- *We encourage the Flow WG to critically evaluate the effects of Dry Alt 2 alternatives on achieving water temperature targets (<59 F) during the April 22 to May 22 timeframe. Dry Alt 2 alternative may exceed "marginal" water temperature targets for steelhead (<59 F) from April 22-May 3. Depending on climatic conditions, dam releases up to 2500 cfs, may be required to achieve marginal temperature targets (see TRFES Table 5.16).*
- *Exceeding marginal water temperature targets for steelhead could interfere with parr-smolt transformation process, (reduced gill ATPase activity) negatively impacting osmoregulation and survival. (See TRFES pg. 182)*
- *Marginal water temperature targets for Coho salmon (<62.6 F) through June 4, and Chinook salmon (<68 F) through July 9 should also be maintained by all flow alternatives.*
- *Ramp down rates following the peak releases (Dry Alt 1 and 2) should not exceed the rates described in the FEIS Implementation plan.*
- *We recognize and support the need to provide short periods of stable flows to support on-going fish habitat modeling efforts.*

Hayden said early indications are that there are a lot of fry out in the river. He pointed out that they are making certain assumptions. Looking at temperature modeling results, we would look at the extreme conditions as a worst-case scenario. We are managing for marginal temperature targets in a dry year to begin with. It is a strong signal for outmigration when you have sharp decrease in flow and increase in temperature you get fish moving. Delayed out migration is in normal and wetter years, so this year would expect to see normal outmigration timing; it is the downramping and temperatures that are the signal for fish.

It was pointed out that this model will be used for hydraulic and sediment transport, it is not for modeling habitat at 7500 cfs. Schrock pointed out that the SAB suggested looking at different inundation levels in considering the value of floodplain lowering. Wittler asked if the river would actually rest if flows are not ramped up, and whether or not it is a good year for the river to rest. Bair discussed the impact of various alternatives on cottonwoods and on foothill yellow legged frogs. Lee pointed out that regeneration is not a riparian objective in a dry year.

Bair said their evaluations suggest that critically dry and dry years are the best at creating stable conditions on the bank for plants. It appears that the system is keyed on a slow recession. A 4,500 cfs bench that is peak in a dry year is the hinge point for many of our constructed floodplains. It interacts nicely with our constructed sites. A recession down from 2,000 to 450 in most locations being nice and slow will not make a difference in the moisture regime, but is "landing the plane softly." Unintended benefits of a dry year in terms of a dry hydrograph.

Lunch

Continue discussion with consensus on Hydrographs to recommend to TMC

Peterson showed the draft 2013 Flow Release Schedule report and went over the parts that will be filled in as a result of this meeting today. McBain's decision tree (slide) was shown as a potential tool. Peterson asked for a sense of where the recommendation is headed. All participants were asked to quickly state where they are with respect to this decision. Opinions varied; there was some support for a hybrid hydrograph. Shea asked that the group clearly define the hybrid. McBain's decision tree was used to structure the discussion of defining the hybrid, and the decision tree and its list of benefits/risks was altered accordingly. Frogs benefit from an earlier peak (drier years). Risks include impact on gravel storage/gravel budget. The discussion of 7500 versus 4,500cfs and the benefits of 2 days at either flow continued.

The group discussed whether or not this would be problematic or beneficial for outmigrant timing? The timing and nature of the descending limb in various hydrographs was considered. Schrock pointed out that in-channel construction can be impacted (July 15 – Sept 15) by higher flows. Ledwin said he is not convinced getting fish out earlier is the best thing to do, since the Trinity has excellent rearing conditions. Hayden clarified that this is avoiding a delay. The Dry Alt 2 hydrograph was presented. Naman suggested that this alternative looks more like a natural hydrograph than anything else we have [**Graph and subsequent description attached**]. Wittler said their flow tracking from last year confirms this. Schrock reminded the workgroup that they should have a portfolio of options that they discuss throughout the year instead of waiting until the last minute.

5 min break

Martin suggested that the hybrid hydrograph be a 2 day peak with 4,500 cfs flow and water water be added on the front end for fish so as to maintain the same descending rates. Connor made a proposed hydrograph. Peterson asked for clarification of the reason for the shift in water. Martin responded that it benefits habitat available for the large number of juvenile fish this year. This was discussed further and consensus finally reached. Wiseman asked about fine sediment transport rates. Scott's slide will be used as the basis to document why Alt 1 and 2 were not chosen.

Action Item: Aaron Martin and Connor Shea will complete the new proposed hydrograph for the Flow Regime by COB tomorrow

Public Technical Input on Consensus Recommendations

No public was present so this item was skipped.

Discussion of presentation to TMC on Workgroup consensus

Peterson asked for questions on how this would be presented. Wittler said the final form would be sent to the group as soon as possible and asked for immediate feedback so they can complete the process. ***Our redistributing this is not a review opportunity but a "fill in the details" opportunity.*** The details will be put into our proposal document as well as the draft summary of the notes from this meeting. This will get distributed to the TMC.

Coordinating Public Outreach/Publishing the Flow Schedule

Peterson said since we are not going to 7500 there is not too much pressure on it this year, but we do distribute flyers at local shops and various sites along the river. One of the handouts contains a list of sites where signs will be put and asked for help in putting up the signs.

Wrap up/Review of Action Items

Peterson – this was covered in the wrap up of the previous items. For the June meeting Peterson said we need to work on variable flow ideas, whether we want to put together a portfolio of ideas, particularly with solid background information. A request was made to start meetings earlier so there would be more time. Variable flows, other flows, potential portfolio with sediment transport are topics for agenda for next meeting.

Adjourn 2:55 PM

DRAFT Version Date 3-19-13

Mar 28, 2013

9:30 AM

Flow Workgroup Meeting Agenda

TRRP Office, Weaverville

WEBEX: [web-link](#)

Call in: 1-408-792-6300

code = 578 659 832

Coordinators: Eric Peterson, Rod Wittler

Desired Outcome: Finalize WY 2013 Trinity River Flow Schedule Alternatives for presentation to TAMWG and TMC

Please read/review:

- March 18 Current Conditions Update (emailed ~ March 11)
- DRAFT Alternative Hydrographs (Excel Flow Scheduler Spreadsheet) and associated Proposal Document (emailed ~ March 15; formatting into proposal template to be emailed prior to meeting)
- Temperature Modeling Results (to be emailed prior to meeting)
- DRAFT flow recommendation planning document – to be used as TMC Brief (emailed ~ Feb. 26 under subject “Flow Scheduling, meeting summary)

Please bring: Updated flow scheduling considerations and comments on proposals

Agenda Items

Time	Topic	Discussion Leader
9:30	Introductions – Review/Approve Agenda – Review Action items	Peterson
9:45	March 2013 Current Conditions Update	Wittler
10:00	2013 Flow Scheduling Proposals	Shea / Martin / Bair
10:30	Discussion of Temperature Model Results (Dry)	Wittler
10:50	Break	
11:00	Public Technical Input – Q & A	Peterson
11:20	Technical discussion of hydrographs – benefits/concerns	Wittler / Peterson
12:00	Lunch	
12:45	Cont. discussion with consensus on hydrographs to recommend to TMC	Wittler / Peterson
2:00	Public Technical Input on consensus recommendations (note: TAMWG also provides an opportunity for public input – Apr. 1st)	Peterson
2:15	Discussion of presentation to TMC on Workgroup consensus	Peterson
2:30	Coordinating Public Outreach / Publishing the flow schedule	Peterson
2:45	Wrap up/Review of Action Items	Peterson
3:00	Adjourn	Peterson

2013 Scheduling Calendar:

- Early March: Temperature modeling of – water year types, ROD hydrographs
- March 8th: Updates (if any) to forecasts to be distributed.
- March 14th: DEADLINE - Flow Schedule Proposals due and disseminated
- Mar 14-27: Temperature modeling of priority proposed flow schedules
- Mar 28th: MEETING – Flow WG discussion and consensus recommendation to TMC
- Apr. 1: TAMWG meeting
- Apr. 2-3: TMC meeting
- Apr. 10: Backup meeting in case required (e.g. forecast WY type changes)



Peterson, Eric <ebpeter@usbr.gov>

[flow@trrp.net] Comments on Restoration Flow Proposals For WY2013

4 messages

Scott McBain <scott@mcbainrush.com>

Tue, Mar 26, 2013 at 8:12 PM

Reply-To: flow@trrp.net

To: "flow@trrp.net" <flow@trrp.net>, "temperature@trrp.net" <temperature@trrp.net>

Hi Eric,

Below are some brief comments and concerns on the Dry year alternatives for consideration during the Flow Workgroup call. Much of these concerns should have been alleviated within the Physical Workgroup, but that process was compromised due to time limitations. While I am substantially frustrated by the "process" shortcomings this year, I would like to commend Conor and others for taking the lead on putting together the Physical Workgroup thoughts on the flow recommendations, and the comments below are in no way critical of his/their efforts. Also, given time limitations prior to the Thursday meeting, I could not fully coordinate with Robert and Sean on these comments, so these reflect my comments as a core Physical Workgroup member and not necessarily those of the HVT Fisheries Department. Lastly, I have coordinated with John on the riparian objectives, and we will be prepared to discuss those on Thursday. Being a fluvial geomorphologist with an inherent love of sediment transport, channel migration, and bar formation, some of my comments may seem like heresy; however, part of how river ecosystems "work" is that some years don't do a whole lot of geomorphic work, and we need to consider a wider range of ecological functions beyond just sediment transport.

I have prepared more extensive description of the comments below, but to ease digestion by the group, I provide the following as an overview of the concerns with the Dry year alternatives. If more detail is needed, I can send that along.

- The Flow Study intentionally provided for variable water years with variable peak flows and volumes for a variety of ecological and water supply reasons. Wetter years accomplished more geomorphic work, while drier years accomplished less geomorphic work, and objectives shifted to ecological benefits to different species or life history stages (e.g., smolt outmigration and wildlife objectives) rather than significant geomorphic objectives. I am concerned that having a large peak release in 88% of the water years (Dry through Extremely Wet) can be problematic for a number of ecological and geomorphic reasons that have not been discussed, let alone assessed.
- While the Flow Proposal document states that the two Dry year alternatives does not apply to out years, the document implicitly assumes that there is now a management objective of transporting more sediment, which will likely have the sociological effect within the TRRP of encouraging higher flows in all future Dry and Normal years. This would have an overall effect of reducing flow variability across water years, and may lead to channel simplification (albeit a larger channel), and unintended negative impacts to native species that benefit from drier water years (e.g., juvenile salmonids, pacific lamprey, river-

dependent bird nesting, foothill yellow-legged frogs).

- I don't see a compelling need to deviate from the Flow Study peak flow magnitude this year (Rush Creek delta and flushing the Junction City side channel). The TRRP has ignored the Rush Creek delta management objective in the Flow Study for nearly 10 years, so I'm not sure why it is suddenly a priority this year. In addition, it seems like we should evaluate whether a smaller peak flow could achieve the Upper Junction City side channel flushing issue, or simply wait until next winter. Perhaps Dave can provide insight and modeling results on Thursday.

- Most importantly, we had a large adult escapement and assumed juvenile production from the 2012 spawners, and if 2013 indeed becomes a Dry water year, juvenile salmonid growth and outmigration conditions in the lower Trinity and Klamath Rivers may be marginal. Therefore, it seems like we should prioritize good growth and outmigration conditions this year with the Trinity River water that we have available to us. Shouldn't this approach produce more successful smolts and returning adults than moving larger volumes of gravel in a Dry water year? Perhaps the fish biologists can provide some opinions on this issue on Thursday.

- Given the concerns mentioned above, the compromised Physical Workgroup deliberation and recommendation process, and the Flow Study intended shifting of flow management priorities from geomorphic objectives to smolt survival and ecological objectives, I have reservations about implementing the peak flows for either Dry Alt-1 or Dry Alt-2 as they stand now, and would like to see one of the Dry year alternatives emphasize:
 - A 2-day 4,500 cfs peak release to mobilize pool tails and medial bars, while minimizing impacts to Pacific lamprey spawning;
 - A fairly rapid recession down to 2,000 cfs, but commensurate with natural snowmelt recession rates during a Dry water year; and,
 - Use the reallocated water from the two actions above to create a longer duration, slow, benched recession from 2,000 cfs that emphasizes good growth and outmigration conditions for the progeny of last year's adult escapement, as well as other native species that are more dependent on a drier water year. Incorporate habitat model data collection needs into the receding benches. Would love to add some flow fluctuation here to mimic natural heating and cooling during the snowmelt runoff period, if the fluctuations are small enough to prohibit foothill yellow-legged frog egg mass scour or desiccation. The egg desiccation model could be easily applied in a day to address desiccation risk from the 2,000 cfs to 450 cfs recession limb, if predicted daily average water temperatures are provided.

Hopefully there is sufficient time for us to apply our analytical tools (water temperature model, 2-D hydraulic model, FYLF egg desiccation model, in addition to sediment transport rating curves) to help evaluate the alternatives.

Scott



Peterson, Eric <ebpeter@usbr.gov>

[flow@trrp.net] Comments on Restoration Flow Proposals For WY2013

4 messages

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Tue, Mar 26, 2013 at 8:12 PM

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- While the Flow Proposal document states that the two Dry year alternatives does not apply to out years, the document implicitly assumes that there is now a management objective of transporting more sediment, which will likely have the sociological effect within the TRRP of encouraging higher flows in all future Dry and Normal years. This would have an overall effect of reducing flow variability across water years, and may lead to channel simplification (albeit a larger channel), and unintended negative impacts to native species that benefit from drier water years (e.g., juvenile salmonids, pacific lamprey, river-

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Scott

The following slide was emailed by Scott McBain and edited within the meeting. Edits were to the top question box, and supplementing the Potential Benefits and Risks.

I think we're all comfortable with the 5-day to 2-day transport efficiency finding...

Potential Benefits

- 2-D hydraulic model data collection
 - WSE, velocities at Lewiston Hatchery
- Maintenance of JC Side Channel
- Rush Creek Delta maintenance
- ROD sediment transport isn't as high as expected in Flow Study, need more geomorphic work
- Increase learning for habitat change at site and systemic levels
- Experiment: does 2 days provide expected sediment transport?
- Affecting whole river / moving more rock on the 40 miles (both benefit and risk?) (more mobilization)
- Others

- RISKS**
- Less range of variability in peak flows
 - Affecting whole river / moving more rock on the 40 miles (both benefit and risk?)
 - Frogs benefit from earlier peak (drier years)
 - Impact on gravel storage / gravel budget

Implement 7,500 cfs

Is there sufficient reason for 7,500 cfs release that deviates from the ROD?

Yes

No

Is there a higher biological or experimental objective/value to use extra 3-days of 4,500 cfs?

No

Yes

Is there ecological harm, uncertainty, or consistency with the ROD that would make 7,500 cfs problematic?

Yes

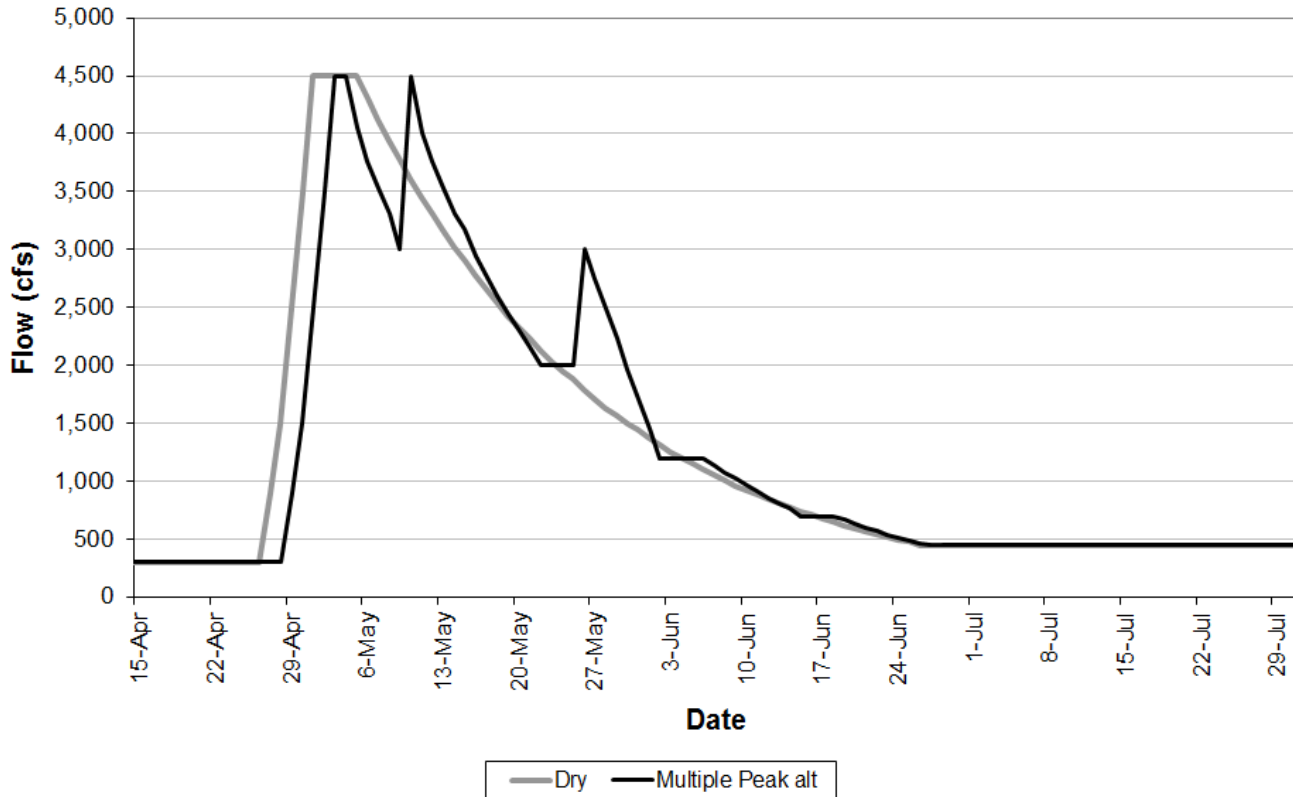
Reallocate flow for other objectives in consultation with other workgroup(s)

Implement adjusted hydrograph Alternative X

No

Variable Peak Suggestion raised by Seth Naman during the meeting.

2013 Flow Release Scheduler



The purpose of this flow schedule alternative is to 1) test the effect of multiple flow peaks on sediment transport and 2) achieve temperature and smolt migration objectives for a dry water year and 3) provide a flow schedule that more closely mimics a natural flow regime of multiple snowmelt peaks 4) provide diverse rearing and feeding conditions for salmonid juveniles and smolts. The flow schedule alternative was also formulated to provide benches for habitat monitoring personnel to perform fish habitat data collection. The multi peak dry water year release has

- A two day peak at 4,500 cfs
- A recession to 3,000 cfs, followed by a one day peak at 4,500 cfs
- A recession to a 2,000 cfs bench for 5 days
- A one day peak at 3,000 cfs
- Recession to a 1,200 cfs bench for 5 days