

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Steve Smith  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseke  
**ID:** Russ Kiefer / Pete Hassemmer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

Wednesday January 9, 2013 9:00am - 12:00pm

1125 N.W. Couch Street, Suite 500, Columbia Room  
Portland, Oregon 97209-4142  
Map Quest [\[Directions\]](#)

**TMT MEETING**  
Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 6332

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnmw.net](mailto:rgumpert@cnmw.net) or call her at (503) 248-4703.*

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## AGENDA

1. Welcome and Introductions
2. Review November 28, 30, and December 4, 12, 18 Meeting Minutes
3. Update on Water Supply Forecast - Doug Baus, COE-RCC
  - a. [NWRFC WSF Current Conditions TDA](#)
  - b. [NRCS SNOTEL SWE % of Normal](#)
  - c. [NWRFC Snow](#)
4. Chum Update - Paul Wagner, NOAA Fisheries
5. Operations Review

- a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
6. Other
- a. Set agenda and date for next meeting - **January 23, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:*

*[Doug Baus](#) at (503) 808-3995*

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

January 9, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Meeting Minutes**

TMT needed more time to review the notes from the November and December 2012 conference calls and meetings, and committed to reviewing and sending comments in before the next TMT meeting so they can be finalized at that time.

### **Water Supply Forecasts**

The action agencies reported on the current official water supply forecasts at a number of projects:

- The Dalles April-August: 92 MAF (105% of average)
- Lower Granite April-August: 22 MAF (105% of average)
- Dworshak April-July: 2,587 kaf (96% of average)
- Libby April-August: 6,898 kaf (118% of average)
  - Doug Baus, Corps, revisited inquiries from the last TMT meeting about the end of December elevation, and reported that it was 2409.67 feet, just shy of the targeted 2411' based on current forecasts and unit availability.
- Hungry Horse May-September: 1,968 kaf (116% of normal)
- Grand Coulee April-August: 58 MAF (103% of normal)

Doug Baus referred TMT to the two additional links to the TMT agenda, showing SNOTEL snow water equivalents and a map of actual SNOTEL site data – both indicating average to above average conditions across the basin.

With regards to Libby, there have been discrepancies between the RFC official and NWS forecasts. The Corps explained the difference is due to different methodologies being used – and both are indicating higher than average WSF at this point. Further, the Libby forecast is high in part due to the higher forecasts coming from areas north in to Canada.

The NWRFC hosts a monthly webinar conference call on water supply forecast and climate outlook; the next one is scheduled for tomorrow, 1/10. Call in information can be found on the NWRFC web site.

### **Chum Update**

Paul Wagner, NOAA, shared that the last field report indicated zero chum spawning. The salmon managers were comfortable with the current operation maintaining a minimum tailwater elevation of 13.5 feet at Bonneville to protect incubating chum. The action

agencies indicated this operation would be maintained until further notice. TMT will revisit this operation in the spring as conditions change.

### **Operations Review**

**Reservoirs:** John Roache, Reclamation, reported on projects. Hungry Horse is at elevation 3547.6 feet (high for this time of year), with 3 kcfs outflows. Grand Coulee was at elevation 1279.3 feet, operating to meet system requirements. At this point, he said there are no end of month elevation requirements. Lisa Wright, Corps, reported on projects. Libby was at elevation 2405.7 feet with 3.1 kcfs inflows and 11.7 kcfs outflows. Albeni Falls was at elevation 2055.6 feet, with 20 kcfs inflows and 15.9 kcfs outflows. Priest Rapids inflows were 144.6 kcfs. Dworshak elevation was 1543.9 feet with 2.7 kcfs inflows and 5.7 kcfs outflows. Lower Granite inflows were 29.2 kcfs; McNary inflows were 191.9 kcfs; and Bonneville inflows were 181.3 kcfs.

In response to a letter sent and follow on TMT inquiry, Steve Hall, Walla Walla District Corps, reported that an incident occurred on Monday when the Corps increased discharges using a more rapid than normal rate given a unit outage at the project. While the Corps stayed within its operating protocol, they did not send a public notice about it, and a letter was sent indicating that fishers on the river were impacted by the change and that safety was a concern. Steve acknowledged the impact and said the Corps would be responding directly to the letter. To address the concern, the Corps is taking steps to improve and update its notification process, including using local radio stations to get the word out that a change will be made, so that fishers and other recreationists are given advanced warning about the changes and can plan accordingly. They will also work to make discharge changes earlier to avoid the impact during day light hours, thereby minimizing the impact to people on the river.

Some of the salmon managers emphasized the importance of this issue and offered additional suggestions to the Corps for how to improve their operations and notification processes so this does not happen again. They also emphasized that several fly fishermen reported the same safety river conditions and associated safety concerns to the author of the letter sent to the Corps.

- **Action:** Steve Hall and Russ Kiefer, Idaho, will discuss resolution of this matter in more detail off line. TMT will be briefed at a future meeting on the actual steps taken to resolve the issue.

**Fish:** Paul Wagner, NOAA, reported that steelhead counts at Bonneville are in the 'teens'. Dave Statler, Nez Perce Tribe, added that downstream movement of juvenile lamprey typically occurs this time of year, with a spike coincident with the winter freshet conditions.

- **Action:** Charles Morrill will share the spring fish forecast at a February face to face meeting.

Water quality: Laura Hamilton, Corps, said the website will be updated with 2013 water quality data soon.

Power: Nothing to report at this time.

**Next Meeting: (Tentative) January 23 conference call**

Agenda items will be identified at a later date. The meeting will be canceled if no agenda items are identified.

**Current TMT Schedule**

- January 23 conf call as needed
- Feb 13 and 27 face to face
- March 13 and 27 face to face
- April 3 and 17 face to face; April 10 and 24 conference calls as needed

**Columbia River Regional Forum**  
**TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES**

**January 9, 2013**  
Notes: Pat Vivian

***1. Introduction***

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of the COE, NOAA, BPA, Montana, USFWS, Washington, BOR, Idaho, Colville Tribe, CRITFC/Umatilla Tribe, Salish-Kootenai Tribes and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

***2. Review of Meeting Minutes – November 28, 30, December 4, 12, 18***

There were no comments on these notes today. The plan is for TMT members to review them in time for the next TMT meeting on January 23.

***3. Update on Water Supply Forecast***

Baus and John Roache, BOR, presented the official forecasts (BOR, NWRFC, and Corps) for January as well as NRCS SNOTEL snow water equivalent data shown in attachment 3a to today's agenda. Karl Kanbergs clarified that these are now based on 3-day forecasts:

- The Dalles (April-August) – 92 MAF, 105% of average
- Lower Granite (April-August) – 22 MAF, 105% of average
- Dworshak (April-July) – 2587 KAF, 96% of average (based on 1929-1999 data)
- Libby (April-August) – 6898 KAF, 118% of average (based on 1929-1999 data)
- Hungry Horse (May-September) – 1968 KAF, 116% of average (based on 1981-2010 data)
- Grand Coulee (April-August) – 57 MAF, 100% of average

As predicted at the last TMT meeting, the Libby end of December elevation was 2409.67 feet as of midnight December 31, meaning that Libby came in slightly under the 2411-foot flood control target for December.

Baus informed TMT members that further information on specific dates of the NWRFC official water supply forecasts may be found in Table 3 of the Water Management Plan.

David Wills, USFWS, asked whether the NWRFC forecast for Libby is consistent with recent changes in RFC forecasting formulas. The COE forecast for Libby is 118% of average, while the RFC forecast is only 101% of average.

The two forecasts are based on completely different methodologies, which accounts for the disparity, Joel Fenolio, COE, replied. The NWRFC uses ESP traces, which vary based on inflow conditions, while the COE uses a multiple regression methodology.

Russ Kiefer, Idaho, asked where the precipitation and snowpack for Libby reservoir is originating. Mostly from the northern end of the basin and Canada, Fenolio replied. Most of the Canadian sites have snotel sites that are significantly above average. Almost all sites in the upper Columbia are 115-144% of average as of January 8, Charles Morrill, Washington, confirmed.

The NWRFC snow information presented in attachment 3b shows average to above average water supply conditions throughout the basin, Baus reported. Kanbergs noted that the NWRFC conducts a monthly webinar on forecasting, which can be accessed through their web page.

#### **4. Chum Update**

The latest survey information indicates that chum are incubating in a 14-foot area, with a plan of maintaining a minimum tailwater elevation of 13.5 feet, Paul Wagner, NOAA, reported. Yesterday's average tailwater elevation was 14-15 feet, Baus reported. BPA studies indicate there should be no problem maintaining an elevation of 13.5 feet below Bonneville, Tony Norris reported.

In light of this information, TMT members decided to take this item off the agenda until late March when chum emergence begins.

#### **5. Operations Review**

**a. Reservoirs.** Hungry Horse is at elevation 3547.6 feet, which is high for this time of year. Current discharges are 3 kcfs, with an increase to 5-6 kcfs expected later this week. Grand Coulee is at elevation 1279.3 feet, operating to meet requirements including maintaining a Bonneville tailwater elevation of 13.5 feet for chum.

Libby is at elevation 2405.7 feet, drafting 11.7 kcfs with inflows of 3.1 kcfs. Albeni Falls is at elevation 2055.6 feet, with inflows of 20 kcfs and releases of 15.9 kcfs. Priest Rapids inflows are 144.6 kcfs. Lower Granite inflows are 29.2 kcfs. McNary inflows are 191.9 kcfs. Bonneville inflows are 181.3 kcfs.

Dworshak is at elevation 1543.9 feet, with inflows of 2.7 kcfs and outflows of 5.7 kcfs. There was discussion of an incident the morning of Monday, January 7, when Dworshak discharges were increased more rapidly than normal due to a unit 2 outage. At 5 am, the Clearwater River elevation increased 0.5 feet, with another 0.9 foot increase at 6 am, followed by another 0.5 feet increase at 7 am, Steve Hall, COE, reported.

The resulting 1.5 foot elevation increase in the Clearwater River over a 3-hour period surprised steelhead fly fishermen 20 miles downstream of Libby on the Clearwater, one of whom emailed the COE to complain. In response to this public safety incident, the COE is taking two steps to prevent further problems:

1. Automate the process for public notification of river elevation changes. This will include public outreach efforts via local radio stations, especially if the change is to occur on a Monday morning.
2. Attempt to make any changes in outflows well before normal daylight hours in order to avoid impacting fishermen.

Charles Morrill, Washington, suggested the COE also install an alarm at the site downstream of Libby where fishermen have the best river access. Russ Kiefer also said he has ideas which he will present to the COE. Further discussion of this issue will continue outside of TMT.

**b. Fish.** Steelhead passage at Bonneville is the only fish activity at present, Wagner reported. Morrill will give an update on 2013 spring run forecasts at the next TMT meeting January 23. Dave Statler, Nez Perce Tribe, noted that movement of Pacific lamprey downstream typically peaks at this time of year.

**c. Water Quality.** A link for the 2013 water quality reports is not yet available on the TMT website, Laura Hamilton, COE, reported. The COE will inform TMT when this is available.

Statler asked how the Snake River programmatic sediment management plan (PSMP) will relate to pool level operations this year in the lower Snake River, particularly at Lower Granite. The operation the COE implemented in 2012 will also be implemented in 2013, Baus replied. Hall noted that the first opportunity to take action under the PSMP will occur during the December 2013 construction season.

The PSMP will help determine how dredging moves forward. Statler asked whether one of the goals is to get back to MOP operations; Baus confirmed that is correct. Lorz suggested the COE provide the region with a public outreach presentation on the PSMP. Hall will follow up on this with the project manager.

**d. Power System.** There was nothing to report today.

## **6. Next TMT Meeting**

TMT will meet next on January 23. Potential agenda items include a report on the Grant County PUD spawning protection program.

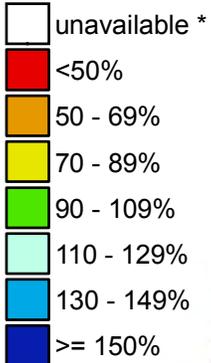
<b>Name</b>	<b>Affiliation</b>
Doug Baus	COE
Paul Wagner	NOAA
Lisa Wright	COE
Tony Norris	BPA
Russ George	WMC
Agnes Lut	BPA
Scott Bettin	BPA
Scott English	COE
Karl Kanbergs	COE
Laura Hamilton	COE
Jim Litchfield	Montana
Scott English	COE

<i>Phone:</i>	
David Wills	USFWS
Charles Morrill	Washington
John Roache	BOR
Russ Kiefer	Idaho
Sheri Sears	Colville
Steve Hall	COE
Margaret Filardo	FPC
Richelle Beck	Grant PUD
Barry Espenson	CBB
Don Tinker	SCL
Ruth Burris	PGE
Greg Lawson	Thompson Reutters
Dave Statler	Nez Perce Tribe
Tom Lorz	CRITFC/Umatilla
Stu Leavitt	Salish-Kootenai
Joel Fenolio	COE Seattle

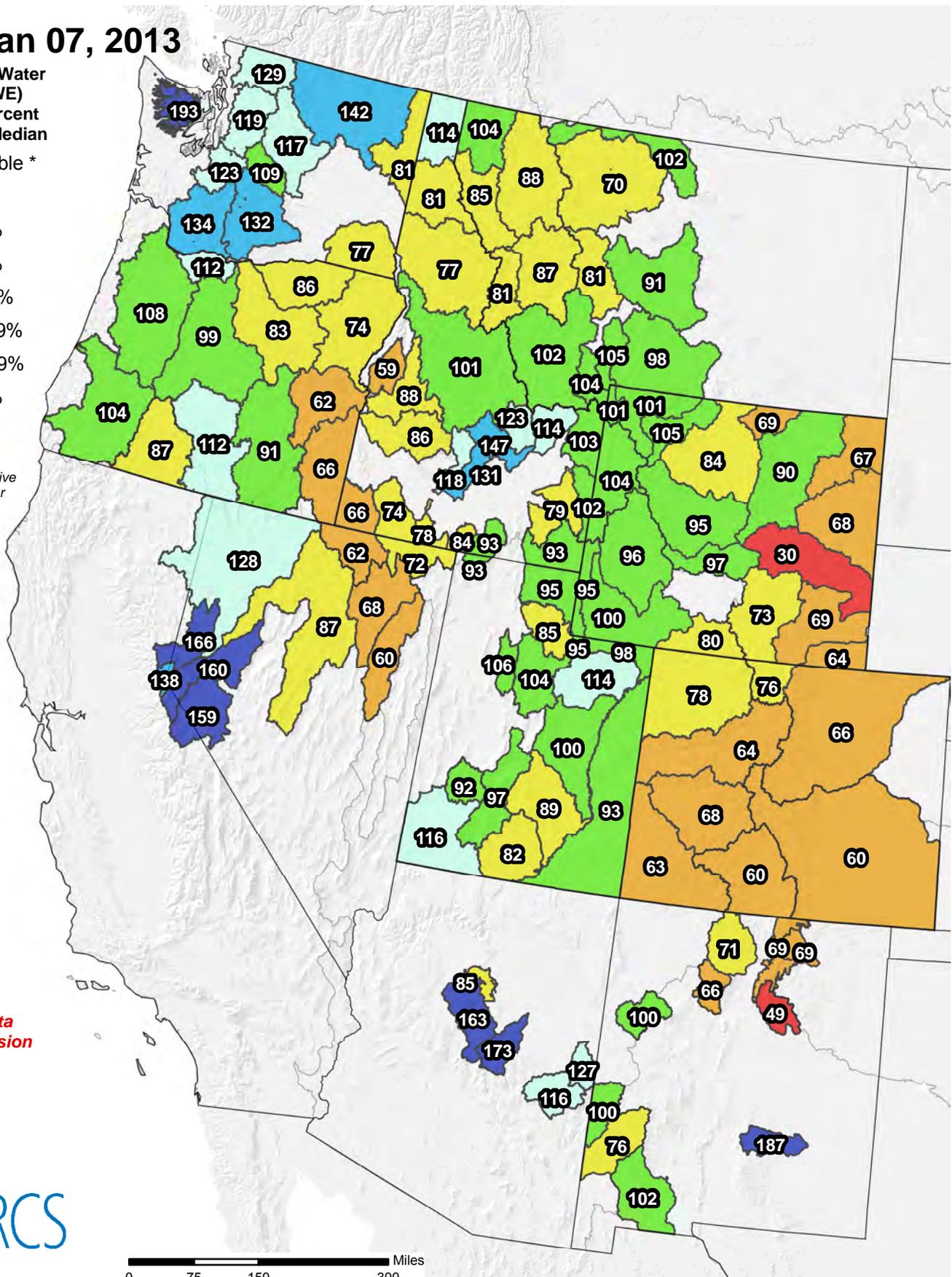
# Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

## Jan 07, 2013

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



\* Data unavailable at time of posting or measurement is not representative at this time of year



*Provisional data  
subject to revision*



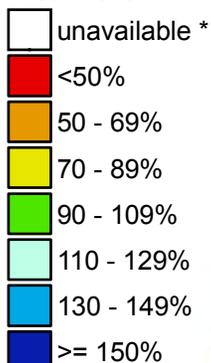
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center  
Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>  
Based on data from <http://www.wcc.nrcs.usda.gov/reports/>  
Science contact: [Jim.Marron@por.usda.gov](mailto:Jim.Marron@por.usda.gov) 503 414 3047

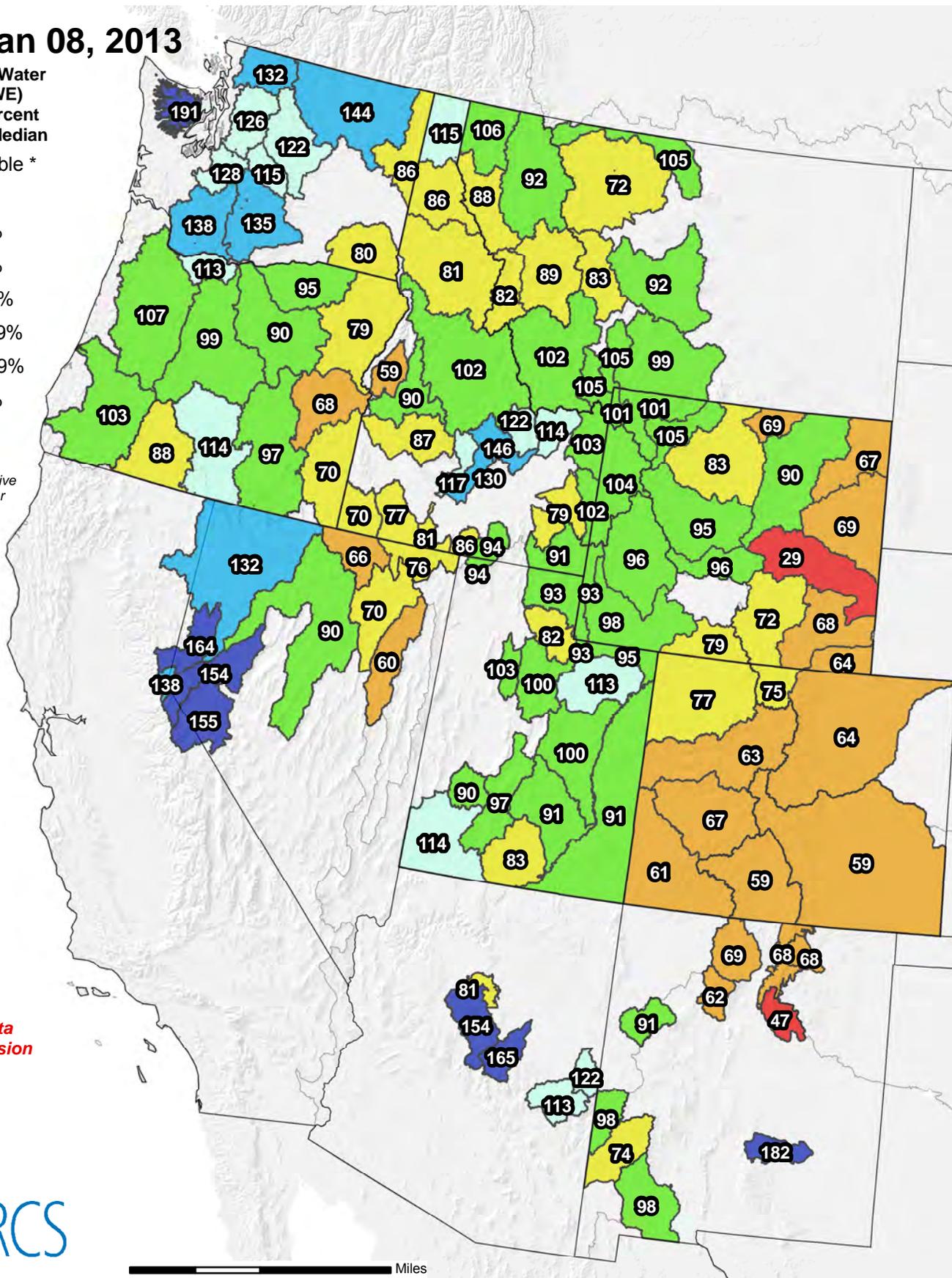
# Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

## Jan 08, 2013

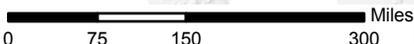
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



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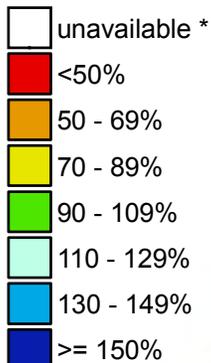
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Prepared by the USDA/NRCS National Water and Climate Center Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>  
Based on data from <http://www.wcc.nrcs.usda.gov/reports/>  
Science contact: [Jim.Marron@por.usda.gov](mailto:Jim.Marron@por.usda.gov) 503 414 3047

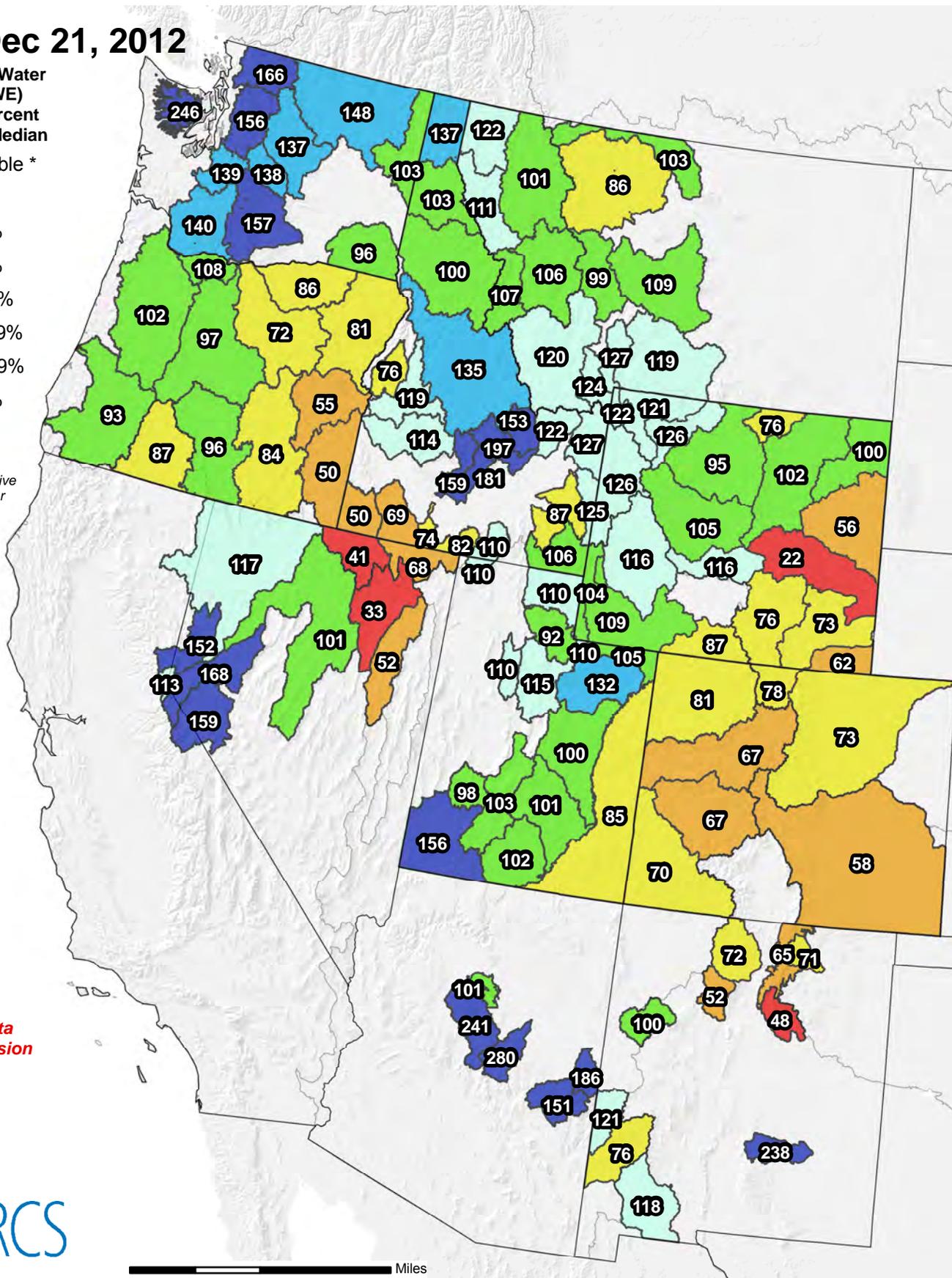
# Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

## Dec 21, 2012

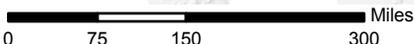
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



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*Provisional data subject to revision*



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Prepared by the USDA/NRCS National Water and Climate Center Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>  
 Based on data from <http://www.wcc.nrcs.usda.gov/reports/>  
 Science contact: [Jim.Marron@por.usda.gov](mailto:Jim.Marron@por.usda.gov) 503 414 3047

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## TMT CONFERENCE CALL

January 23, 2012 9:00am - 12:00pm

### CONFERENCE CALL INFORMATION

Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 8319

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## AGENDA

1. Welcome and Introductions
2. Vernia Bar Update - Russell Langshaw, Grant County PUD
3. Other
  - a. Set agenda and date for next meeting - **February 13, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Doug Baus](#) at (503) 808-3995*







NDE (NORTH  
DOWNSTREAM  
ENTRANCE)

UPPER ENTRANCE

SLED SUPPORT

FILL  
PLATE

LOWER  
ENTRANCE

GATE

FLOW SPLITTER

LOWER  
FLUME

LAMPREY PASSAGE SYSTEM  
TIE-IN (BY OTHERS)

UPPER  
FLUME

PIT TAG  
ANTENNA  
-GFE- TO BE  
INSTALLED  
BY  
CONTRACTOR.  
NOT SHOWN  
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el +1.63  
el -4.25

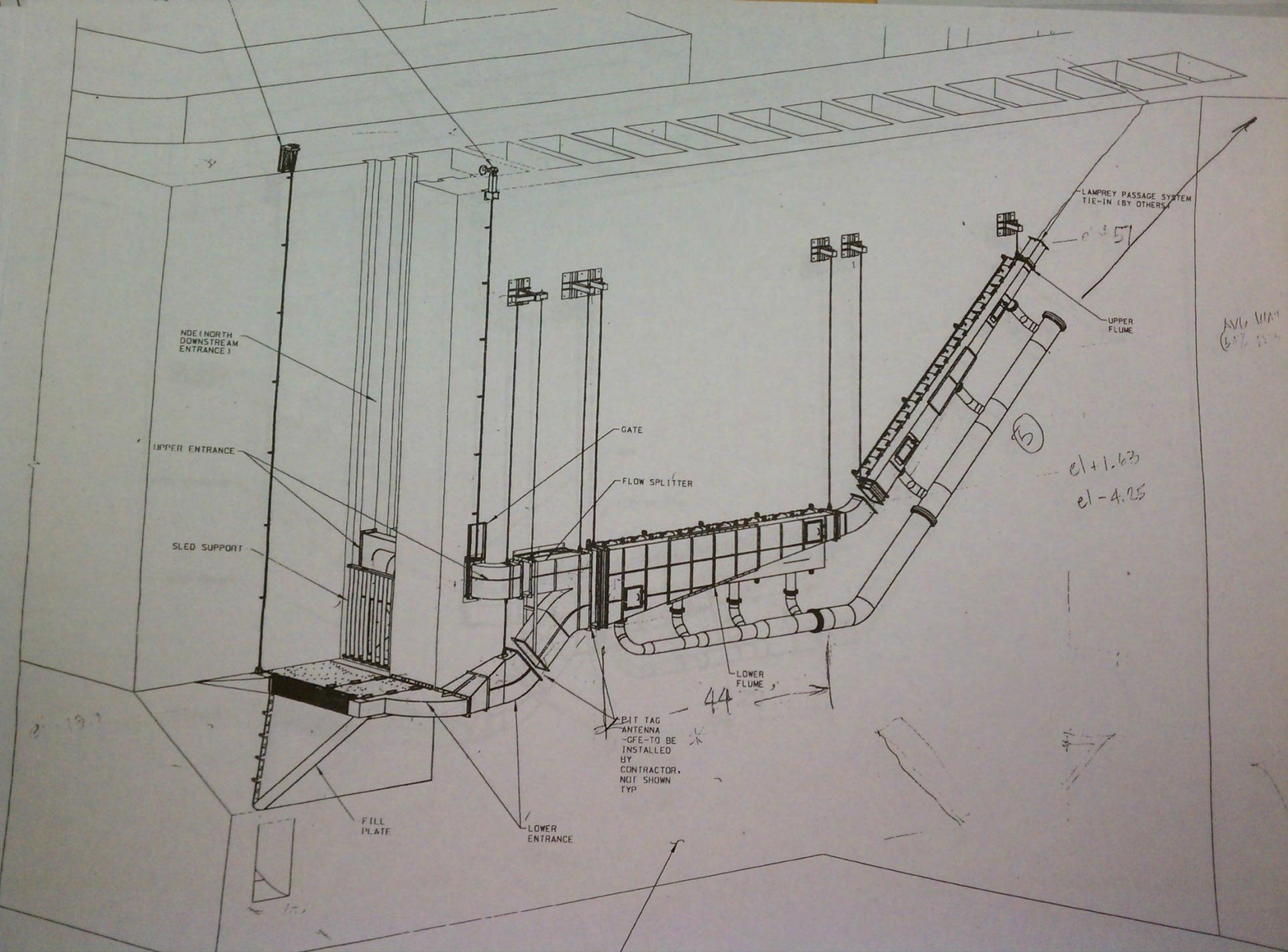
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**VICON**

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**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

Wednesday February 13, 2013 9:00am - 12:00pm

1125 N.W. Couch Street, Suite 500, Columbia Room  
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Map Quest [\[Directions\]](#)

**TMT MEETING**  
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## AGENDA

1. Welcome and Introductions
2. Review January 9 Meeting Minutes
3. Forecast - Stephen King, NOAA
  - a. [Water Supply](#)
4. Update on Water Supply Forecast - Doug Baus, COE-NWD
  - a. [NWRFC WSF Current Conditions TDA](#)
  - b. [NRCS SNOTEL SWE % of Normal](#)
  - c. [NWRFC Snow](#)

5. Vernita Bar Update - *Russell Langshaw, Grant County PUD*
6. Spill Priority List - *Doug Baus, COE-NWD*
  - a. [List](#)
7. Chum Update - *Doug Baus, COE-NWD; John Roache, BOR, and; Tony Norris, BPA*
  - a. [Recent/Ongoing BON Operations](#)
8. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
9. Other
  - a. Set agenda and date for next meeting - **February 27, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
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# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

February 13, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### 1/9/13 Notes Review

No comments were offered to the Official Minutes or Facilitator's Summary. As such, these notes were considered final.

### **NMFS NWS Forecast Report:**

Stephen King, NOAA NWS, presented information on climate forecasts for the region. Re: precipitation, he reported that the April-September outlook on the east side is near or below normal, and on the decline. The southeast is the driest area and western Washington is the wettest. For observed conditions, precipitation was high in October (189% of normal) and has been on a downward trend since then, with January precipitation at 66% and a combined Jan-Oct above The Dalles showing 112% of normal (mostly from the wet October). Re: temperature, it was a warm Fall and runoff was higher in the October-December period, with below normal runoff in January. Uncertainty remains about how much runoff is still trapped as ice. There have been no consistent big snow events and snow conditions across the Snake Basin have been below normal. In parts of the Columbia, snow conditions are normal to above normal.

Sea surface temperatures are near neutral right now, with some trending toward La Nina conditions. Stephen also showed that the SST Anomaly and Streamflow calculations have shown fairly close correlation over the last few years.

The current 10-day forecast is showing some increase in precipitation, with below normal temperatures over the next 1-3 month period. Specific water supply forecasts were reported as follows:

- Libby – 95% of normal
- Hungry Horse – 92% of average
- Grand Coulee – 91% of average
- Dworshak – 94% of average
- Lower Granite – 85% of average
- The Dalles – the 87% of average

A TMT member commented that while the NWS 'official' forecast uses a 10-day outlook, the action agencies use a 3-day forecast and the monthly 'final' for management purposes is the one that gets posted on the 5<sup>th</sup> working day of each month.

Some issues navigating the NWS site were raised and Stephen explained that the website requires updated versions of Explorer, Firefox or Google Chrome, but that the pages can also be manipulated by manually changing the URLs. Stephen said he would like to hear feedback if anyone continues to experience data access issues. He also noted that the next live water supply briefing will be held on 3/7.

TMT had some discussion about the use of 'percent of normal' water supply forecast vs. looking at volumes to inform management decisions, and NOAA agreed that while the percentages are a way to quickly show information and comparisons, they see a potential shift in this approach given their use of ESP traces in their forecasting methodology. In response to a question, Stephen also explained that the 'CHIPS' is the current model used to make forecasts, and was improved from the old model but still relies on much of the same data. Stephen was open to walking TMT through the model if there is interest.

### **Official Water Supply Forecasts**

Doug Baus, Corps, and John Roache, Reclamation shared the current official water supply forecasts:

- The Dalles April-August 82 MAF (94% of normal)
- Dworshak April-July 2,202 kaf (90% of normal)
- Libby April-August 6,384 kaf (109% of normal)
- Lower Granite April-July 18 MAF (92% of normal)
- Hungry Horse May-September 1,877 kaf (111% of normal)
- Hungry Horse February-July 2,253 kaf (111% of normal)

The Corps acknowledged that their official forecast at Libby is very different from the NWS, explaining that this is because they use very different models – and it is still early in the year so those forecasts will likely become less divergent over time.

### **Vernita Bar**

Russell Langshaw, Grant County PUD, reported that spawning occurred from October 24-November 18 and 111 redds were counted on Vernita Bar. There were no issues meeting the operating constraints during this period and temperatures have been higher so the redds are progressing quickly. Emergence is expected around March 7. Russell will share updates with TMT every two weeks.

### **Spill Priority List**

Doug Baus, Corps, shared the current list that had been coordinated through the end of February. Today, the action agencies proposed extending the current list out through 3/19 and revisiting with TMT to put any changes in place prior to the spill season. The salmon managers agreed with this approach so TMT will revisit the list in early March.

## **Chum Update**

Doug reported that the current operation for chum is to meet a 13.5 foot minimum tailwater elevation at Bonneville, and this has been met with success while other work is underway at the project. He shared photos of the dredging operation at PH2 which was successfully completed and had been coordinated through FPOM. Also coordinated through FPOM, spillway repair work is ongoing and expected to be complete by 2/23 with no issues or delays to report. The lamprey passage improvement (flume structure) project is also going well. Through FPOM coordination, the in water work for this has been extended through 3/31. Spill has been implemented to meet the various needs at Bonneville and has stayed within TDG requirements (FPOM coordinated an agreement 'not to exceed 106% day average). Doug said that off ramp contingencies are in place should extra runoff in March pose challenges to meeting all the demands, but before a change is made, this would be coordinated with the region – including TMT if alternative operations were options to be explored.

John Roache said Grand Coulee is currently operating to meet the chum flows at Bonneville and is still on target to meet the April 10 elevation for spring migrants (with no draft to date). That being said, the latest decrease in water supply forecast might require a draft at Grand Coulee in the near future and John suggested that the action agencies would be watching this closely.

No changes to the current operation were proposed today. TMT is scheduled to meet next on 2/27 but will keep next Wednesday 2/20 open should the need arise to revisit this operation sooner than two weeks out.

## **Operations Review**

Reservoirs – Hungry Horse was at elevation 3528 feet, operating about 2.2 kcfs to meet Columbia Falls minimums. Grand Coulee was at elevation 1280.8 feet, operating to meet the 13.5 foot tailwater at Bonneville for chum. Libby was at elevation 2394.72 feet, with 2.4 kcfs inflows and 4.0 kcfs outflows. Albeni Falls was at elevation 2055.45 feet, with 18.3 kcfs inflows and 15.1 kcfs outflows. Dworshak was at elevation 1542.6 feet, with 2.5 kcfs inflows and 1.6 kcfs outflows. Lower Granite inflows were 30.8 kcfs, Bonneville inflows were 150.9 kcfs.

Fish, Water Quality and Power – Nothing to report.

## **Next Meeting – 2/27 Conference Call**

Agenda items include:

- Chum Operation
- Other?

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

**February 13, 2013**

Notes: Pat Vivian

#### ***1. Introduction***

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of the COE, NOAA, BOR, BPA, NWRFC, Oregon, Washington, USFWS, CRITFC/Umatilla Tribe, Nez Perce Tribe and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### ***2. Review of Meeting Minutes – January 9, 2013***

There were no comments on the January 9 official minutes or facilitator's notes today. Paul Wagner, NOAA, said he has read and approved all minutes and notes back through November 2012. As of today, all past minutes and notes can be considered final unless future concerns are raised.

#### ***3. NWRFC Forecast***

Steve King, NWRFC, gave a presentation on the regional water supply forecast for April-August 2013, linked to this item on today's agenda. After a wet October, most areas of the region are expected to have normal or below normal water supplies according to the overall forecast. The driest areas are expected to be in eastern Oregon and along the Snake River.

Observed conditions include precipitation, temperature, runoff and snowpack. The precipitation forecast for October 2012 was 189% of normal as compared to 66% of normal for January 2013 alone. Because most precipitation to date fell in October, the impact on runoff for spring migrants will be less than if the precipitation had occurred later in the season, when temperatures were low enough to store more of it in the mountains. Conceivably some of the runoff is still locked in ice. While conditions in October-December were above average at all dams measured, January was below average for all dams. Snowpack forecasts are slightly less than they were in January, with all three sites in the upper Columbia well below normal. The snowpack outlook is similar for the Snake River basin.

Future forecast conditions King covered include climate outlooks, the NWRFC's official 10 day precipitation forecast and various water supply forecasts.

A review of climate and sea surface temperatures indicates a definite shift in ocean temperatures over the past 12 months. Despite similar instantaneous values in February 2012 and February 2013, the 3-month averages are different, presenting a

different overall picture. King said the take-home message is that all available models indicate ENSO-neutral conditions will continue over the next 12 months.

Adjusted runoff on the Columbia as measured at The Dalles Dam shows that the past 3 years (2010-12) followed the expected ENSO trend closely. The expected runoff for 2013 is slightly less than average, but there are a wide range of possibilities as to what might actually occur.

The climate outlook, including precipitation, temperature and water supply forecasts, indicates an equal probability of normal conditions for the rest of this year. It's likely that temperatures will continue to be below normal, as they have been for the past 45 days. King noted that the water supply forecasts issued February 12 and posted to the TMT website are all 10-day forecasts, which the NWRFC considers its official forecast. BPA clarified the official RFC forecast used by the Action Agencies for the Dalles and Lower Granite is the 3 day initialized ESP forecast available on the close of business on the 5<sup>th</sup> working day of the month as described in the Water Management Plan.

King pointed out that the updated RFC website works using Chrome, Firefox and Explorer 9, but Explorer 8 and other outdated browsers don't make use of the website's latest features. He invited TMT members to email him details of any problems they have accessing information on the RFC website.

Discussion moved to RFC water supply forecasts for individual basins, with general downward trends in the forecasts for just about every location. The forecasts were ranked in relation to years of record, with higher numbers indicating a dry trend:

- Libby – 95% of normal (34 of 53 years)
- Hungry Horse – 92% of normal (29 of 43 years)
- Coeur d'Alene Lake – 87% of normal (also 29 of 43 years)
- Grand Coulee – 91% of normal (39 of 53 years)

*Snake River:*

- Jackson Lake Dam – 81% of normal (32 of 43 years)
- Upper snake – 77% of normal (also 32 of 43 years)
- Dworshak – 94% of normal (29 of 46 years)
- Lower Granite – 85% of normal (38 of 53 years)

*Lower Columbia River:*

- Chelan Dam – 85% of normal (31 of 43 years)
- Willamette River – 97% of normal (24 of 43 years)
- Rogue River – 85% of normal (30 of 43 years)
- The Dalles (January-July) – 87% of normal (42 of 53 years)

King invited everyone to attend the NWRFC's monthly webinars, which are announced on their website. The next webinar is March 7. King explained that CHPS (Community Hydrologic Prediction System) is NWRFC's new model for making forecasts. The model has been reprogrammed efficiently and allows quick adjustments, but it's limited in that it contains data only through 2003. Charles Morrill, Washington, asked when data for years after 2003 will be added. Collecting data for the model has been a labor-intensive effort, and the NWRFC is working hard toward that goal, King replied.

Discussion moved to whether it makes more sense for water supply forecasts to be made in terms of actual volume vs. percent of normal. Tony Norris, BPA, said using percent of normal made sense when a regression formula was used, but with ESP forecasts it's more informative from a water management standpoint to use volumes. Russ Kiefer, Idaho, said fish biologists generally find volume forecasts more useful than percent of normal. King replied that normal is only a baseline, and there are varying ways of calculating it.

Morrill asked whether the NWRFC would be willing to provide TMT with a walk-through demonstration of how the new model works, and King said his office would consider the request.

#### ***4. Update on Water Supply Forecast***

Baus and John Roache, BOR, presented the latest official water supply forecasts for individual basins:

- The Dalles (April-August) – 82 MAF, 94 % of average
- Dworshak (April-July) – 2202 KAF, 90% of average
- Libby (April-August) – 6384 KAF, 109% of average
- Hungry Horse (May-September flood control period) – 1877 KAF, 111% of average
- Hungry Horse (February-July) – 2253 KAF, 111% of average
- Lower Granite (April-July) – 18 MAF, 92% of average

Kiefer asked about the disparity between the COE and RFC official runoff forecasts for Libby, with the COE forecast being significantly higher at 109% of average than the RFC forecast at 95% of average. Joel Fenolio, COE Seattle, said the two models for forecasting runoff volumes use entirely different processes. He emphasized that it's still early in the season, and good snowpack in March and April 2013 could yet materialize.

#### ***5. Vernita Bar Update***

Russell Langshaw, Grant PUD, gave the first of the 2013 season's updates on Hanford Reach protection flows. Spawning began October 24 and ended on November 18, with 118 redds counted on Vernita Bar. At the current elevation, protection flows are

65 kcfs which have been easily met. Langshaw predicted that rearing protections will end on March 7. If any change in program status is expected over the next two weeks, Langshaw will provide Paul Wagner with an update in time for the March 27 TMT meeting.

## **6. Spill Priority List**

Baus informed TMT that the current spill priority list, attached to today's agenda, is scheduled to expire at the end of February. The Action Agencies proposed to extend it through March 19. Wagner said FPAC has discussed this proposal and approved the request. The list will therefore be extended through March 19 and the Action Agencies will coordinate a spill priority list for March 20 and beyond at a later date.

## **7. Chum Update**

The Action Agencies have continued to maintain the tailwater elevation at a minimum of 13.5 ft. for the chum operation, Baus reported. He updated TMT on FPOM-related operations that have been completed or are currently underway. The dredging operation in the forebay of PH2 has been successfully completed. The spillway repair work is scheduled to be completed by February 23. There are no apparent construction delays at this time; the in-water work window has been extended through March 31 if more time is needed. All of this has been coordinated through FPOM.

Baus explained that the COE has been spilling water to facilitate this work. The daytime operation below PH2 requires an outage of PH2 therefore the Corps is spilling approximately 20-40 kcfs in order to maintain a minimum tailwater elevation of 13.5 feet, and the COE expects to continue to provide that flow. In further discussions with NOAA Fisheries on February 6 NOAA indicated no ESA concerns for elevated TDG above the 105 percent OR state standard at Warrendale, provided the 12-hour average TDG does not exceed 106 percent. If the 12-hour average TDG exceeds 106 percent at Warrendale, then the Corps will take action to reduce TDG back down below the 12-hour average of 106 percent to alleviate any potential impacts to ESA-listed species.

Kiefer asked about the COE's contingency plan in the event of unregulated runoff in early March, which could result in TDG exceedances. If there is more water in the river, depth compensation will help with TDG management, Scott Bettin, BPA, replied. Karl Kanbergs, COE, pointed out that once the stilling basin work is done, the Bonneville operation can transition to flat spill patterns which tend to minimize TDG production.

Norris and Roache discussed water management prospects for continued chum flows. According to the January forecast for Grand Coulee, the April 10 elevation objective for spring migrants was 1252.8 feet. Since then, a 10 MAF decrease in the forecast for The Dalles brought the April 10 elevation to 1276.7 feet. BOR has stayed on track to meet that objective, but expects that some drafting of Grand Coulee will be required to maintain the 13.5 feet below Bonneville for chum unless there is a lot of rain.

It is currently forecasted that meeting the 13.5 feet tailwater will draft Grand Coulee below the end of February VDL elevation. Roache and Norris agreed that the balancing act between chum flows and the April 10 elevation needs to be watched closely over the next few weeks in light of current dry conditions, with check-ins at least weekly. TMT therefore scheduled a tentative conference call on February 20 to revisit the chum operation.

Dave Statler, Nez Perce, asked how tailwater management at Bonneville for chum might affect construction of the lamprey flume. At this time the Corps does not anticipate a change in the chum tailwater elevation would delay the completion date of the lamprey work, Baus replied.

## **8. Operations Review**

**a. Reservoirs.** Hungry Horse is operating to meet the minimum flow requirement below Columbia Falls which will draft Hungry Horse to or slightly below the end of February flood control requirement of 3537.1 feet. Current discharges of 2.2-2.3 kcfs are expected to bring it to within 1 foot of that elevation. Midnight on February 11, Grand Coulee was at elevation 1280.8 feet, operating to meet the 13.5 foot chum tailwater elevation requirement below Bonneville.

Libby midnight elevation on 2/11 was 2394.72 feet with inflows of 2.4 kcfs and releases of 4 kcfs. Albeni Falls is at elevation 2055.45 feet with inflows of 18.3 kcfs and releases of 15.1 kcfs. Dworshak is at elevation 1542.6 feet with inflows of 2.5 kcfs and releases of 1.6 kcfs. Lower Granite daily average inflows are 30.8 kcfs. Bonneville daily average inflows are 150.9 kcfs.

**b. Fish.** There was nothing to report today.

**c. Water Quality.** There was nothing to report today.

**d. Power System.** There was nothing to report today.

## **6. Next TMT Meeting**

Tentatively there will be a TMT conference call on February 20 to check in on the chum operation. The next regular TMT meeting will be on February 27.

<b>Name</b>	<b>Affiliation</b>
Russ Kiefer	Idaho
Paul Wagner	NOAA
Doug Baus	COE
John Roache	BOR
Tony Norris	BPA
Kevin Heitsuman	COE
Karl Kanbergs	COE

Steve King	NWRFC
Scott Bettin	BPA
Agnes Lut	BPA
Kim Johnson	COE
Scott English	COE
Rick Kruger	Oregon

*Phone:*

Charles Morrill	Washington
David Wills	USFWS
Heather Dohan	Puget
Joel Fenolio	COE Seattle
Ruth Burris	PGE
Don Tinker	SCL
Margaret Filardo	FPC
Dave Benner	FPC
Barry Espenson	CBB
XX	EWEB
Richelle Beck	Grant PUD
Tom Lorz	CRITFC/Umatilla
Russell Langshaw	Grant PUD
Dave Statler	Nez Perce

**SPILL PRIORITY LIST - Effective February 13, 2013 through March 19, 2013.**

<b>LEVEL 1 – up to the 110% TDG STANDARD<sup>1</sup></b>		
<b>PRIORITY ORDER</b>	<b>PROJECT</b>	<b>SPILL ESTIMATE (KCFS)</b>
01	BON	105
02	TDA	45
03	JDA	20
04	MCN	48
05	IHR	25
06	LMN	18
07	LGS	18
08	LWG	20
09	DWR	35% of total flow
10	CHJ	25
11	GCL	0 (OT) or 5 (DG) <sup>2</sup>

<b>LEVEL 2 – up to 115% TDG</b>		
<b>PRIORITY ORDER</b>	<b>PROJECT</b>	<b>SPILL ESTIMATE (KCFS)</b>
12	BON	120
13	TDA	60
14	JDA	80
15	MCN	80
16	IHR	35
17	LMN	23
18	LGS	23
19	LWG	30
20	CHJ	61
21	GCL	5 (OT) or 10 (DG) <sup>2</sup>

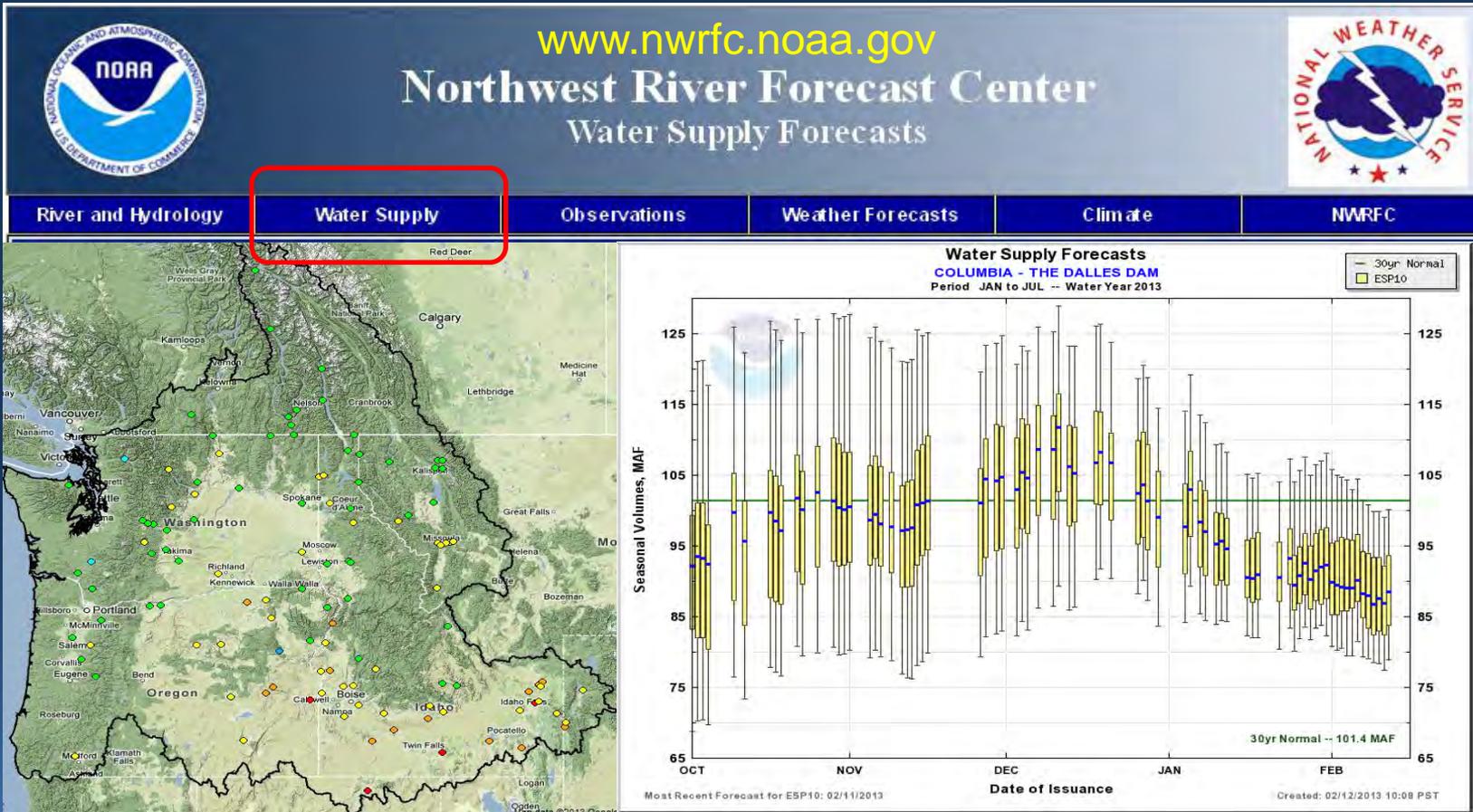
<b>LEVEL 3 – up to 120% TDG</b>		
<b>PRIORITY ORDER</b>	<b>PROJECT</b>	<b>SPILL ESTIMATE (KCFS)</b>
22	BON	140
23	TDA	135
24	JDA	144
25	MCN	140
26	IHR	75
27	LMN	44
28	LGS	52
29	LWG	45
30	CHJ	189
31	GCL	10 (OT) or 15 (DG)

**LEVELS 4-7 (125%, 127%, 130%, and 135% TDG, respectively):** Same project Priority Order as in Level 3.

<sup>1</sup> Outside of Fish Passage Season, the Clean Water Act standard for total dissolved gas (TDG) is ≤110% at all projects.

<sup>2</sup> Spill at GCL is either through the outlet tubes (OT) or the drum gates (DG), depending on reservoir elevation. Spill through the OT produces more TDG.

# February 2013 Water Supply Briefing



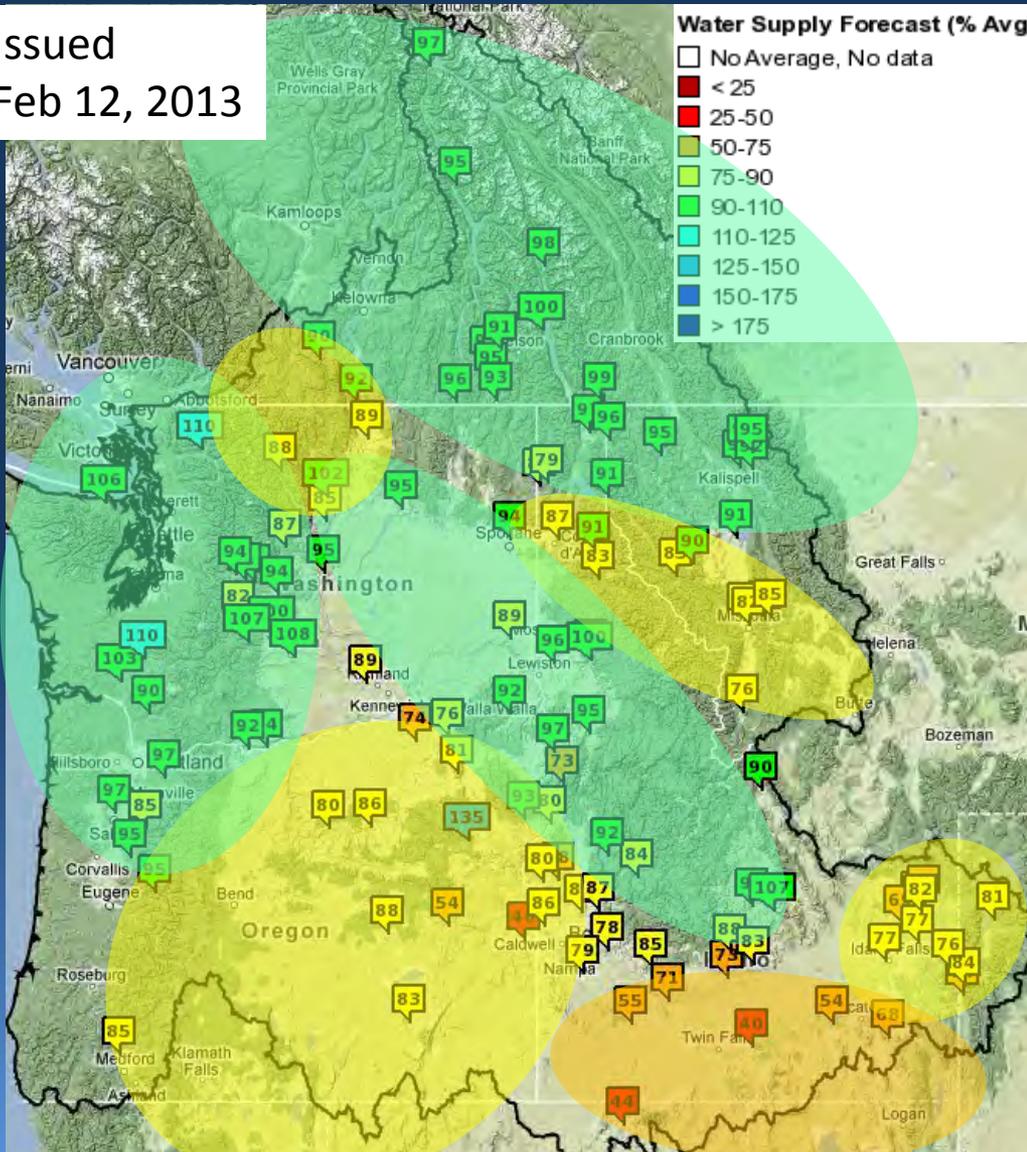
Steve King, NWRFC  
Stephen.King@noaa.gov  
(503)326-7291



# Water Supply Summary



Issued  
Feb 12, 2013

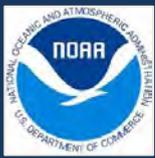


Most eastside Apr-Sep forecasts are near or below normal

Most forecasts have been on the decline due to current dry regime.

Conditions are generally driest in the south-eastern basins

Wettest forecasts are in western Washington and in the mid latitudes of Idaho.



# Observed Conditions



Precipitation

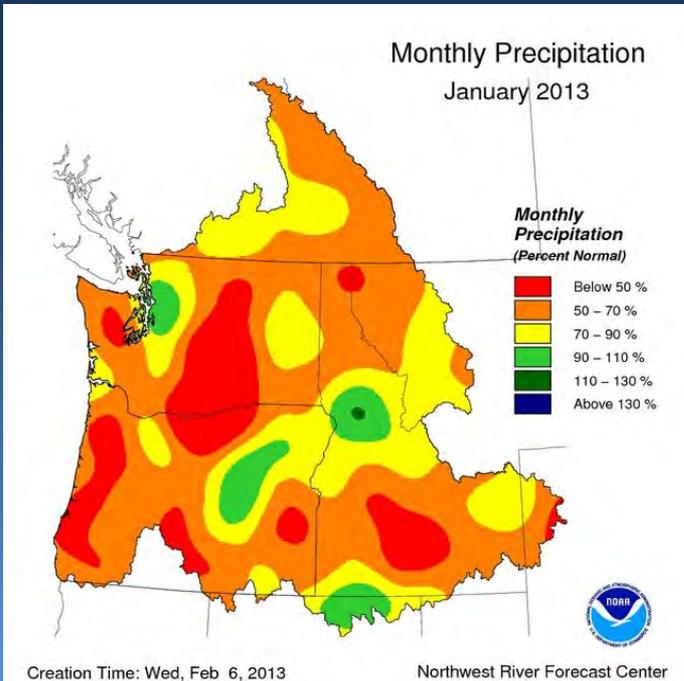
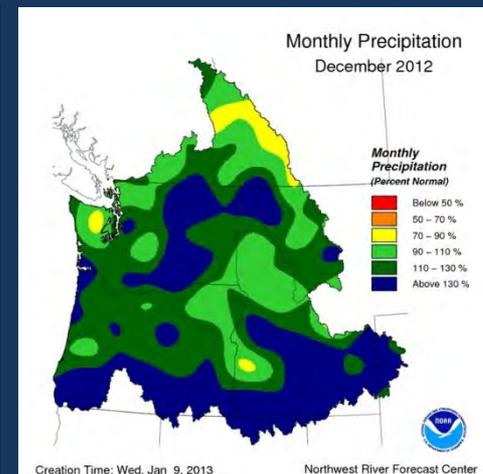
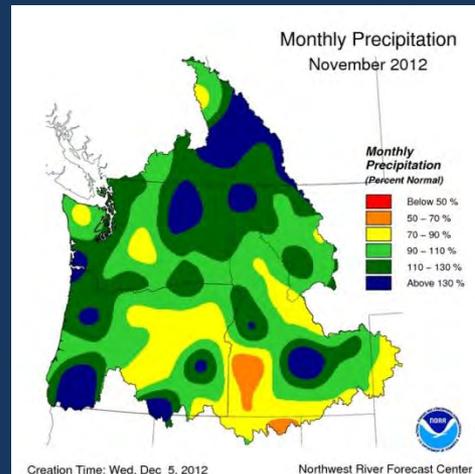
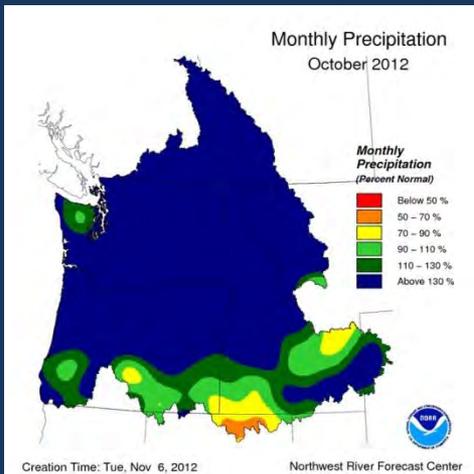
Temperature

Runoff

Snowpack



# Observed Precipitation

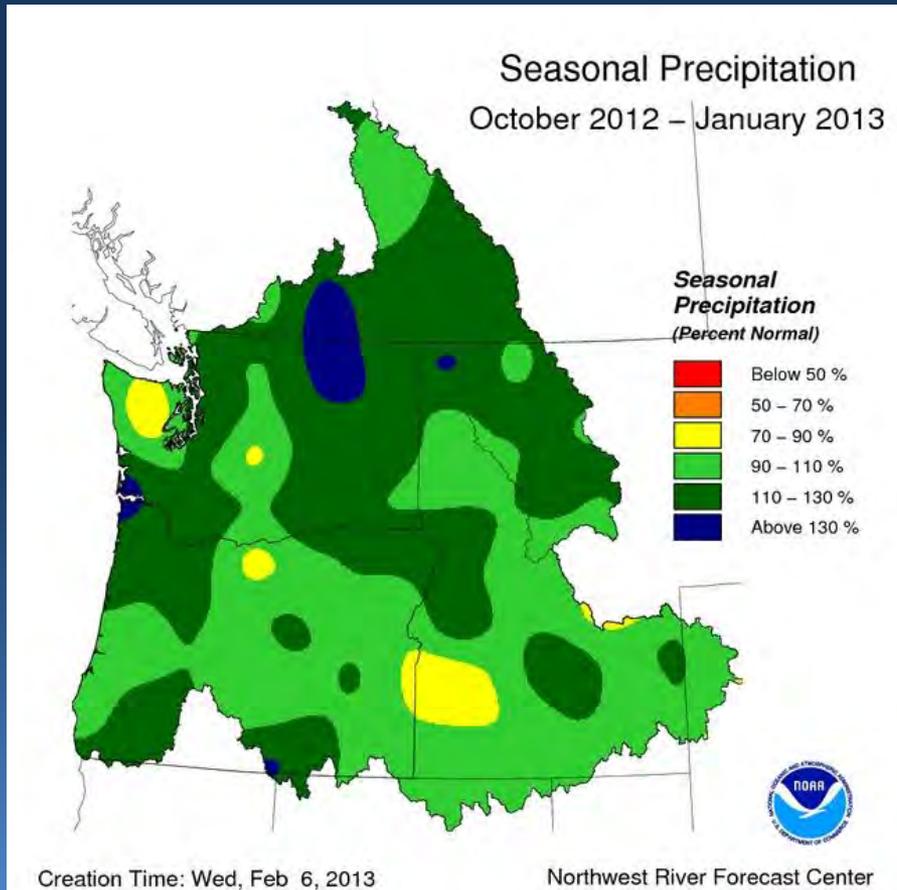


## Observed Precipitation Columbia River Above the Dalles

Oct	2012	3.13	189%
Nov	2012	2.97	105%
Dec	2012	3.61	121%
Jan	2013	1.83	66%



# Observed Precipitation

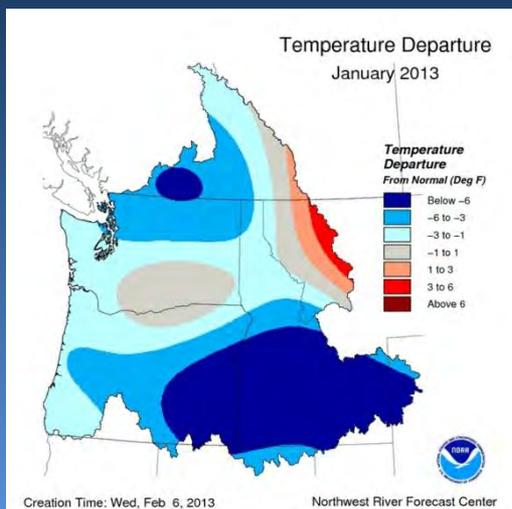
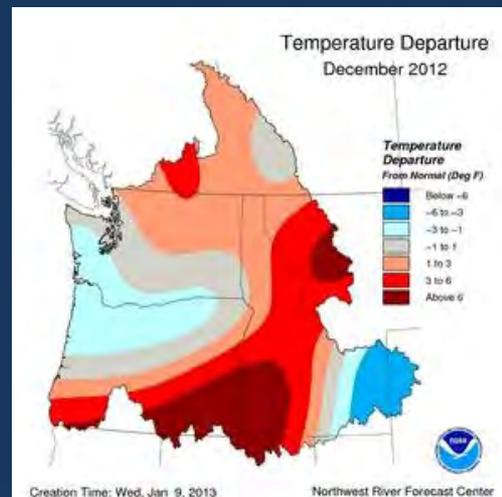
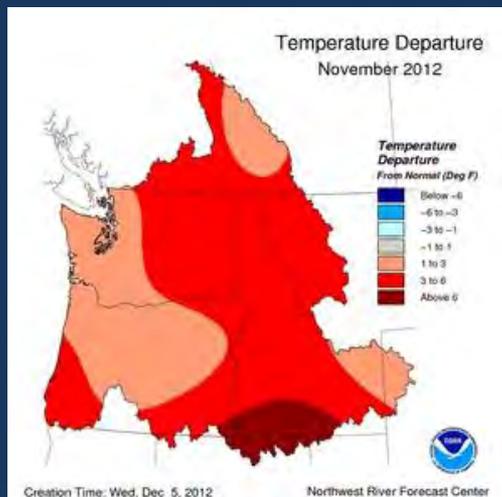
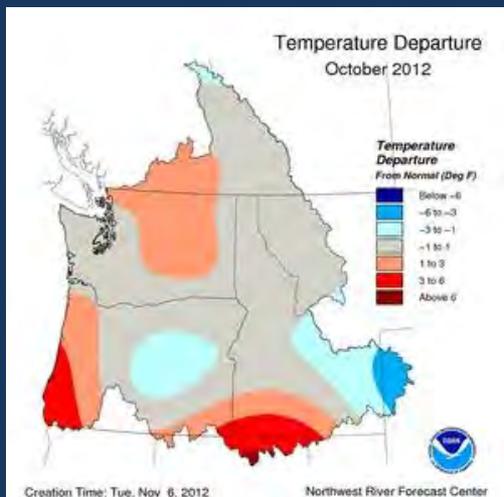


Observed Precipitation  
Water Year to Date  
Columbia River Above the Dalles

Oct-Oct	3.13	189%
Oct-Nov	6.1	136%
Oct-Dec	9.7	130%
Oct-Jan	11.5	112%



# Temperature Departures

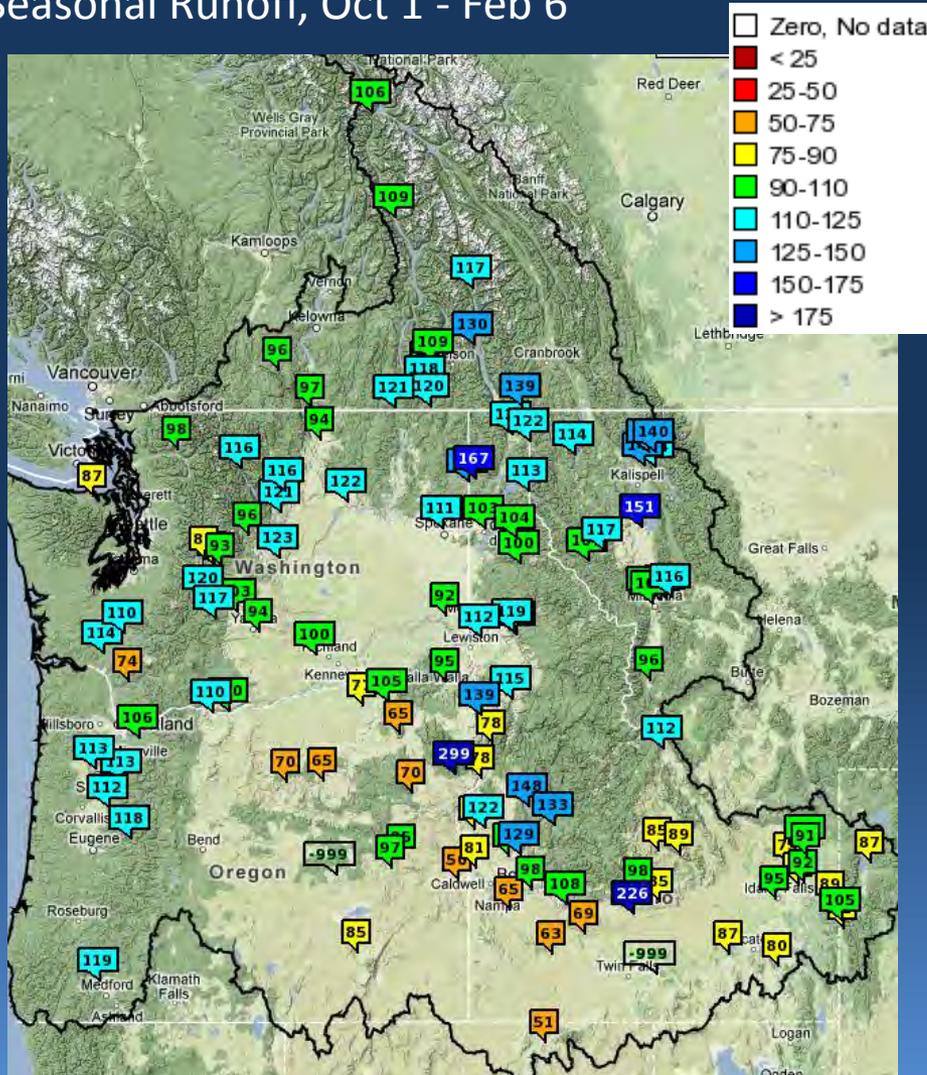




# Current Adjusted Runoff Conditions



Seasonal Runoff, Oct 1 - Feb 6



Percent of Normal

Oct-Dec    Jan

MICA	107	98
LIBBY	121	97
GRAND COULEE	131	96
DWORSHAK	141	80
LOWER GRANITE	104	66
THE DALLES	119	88

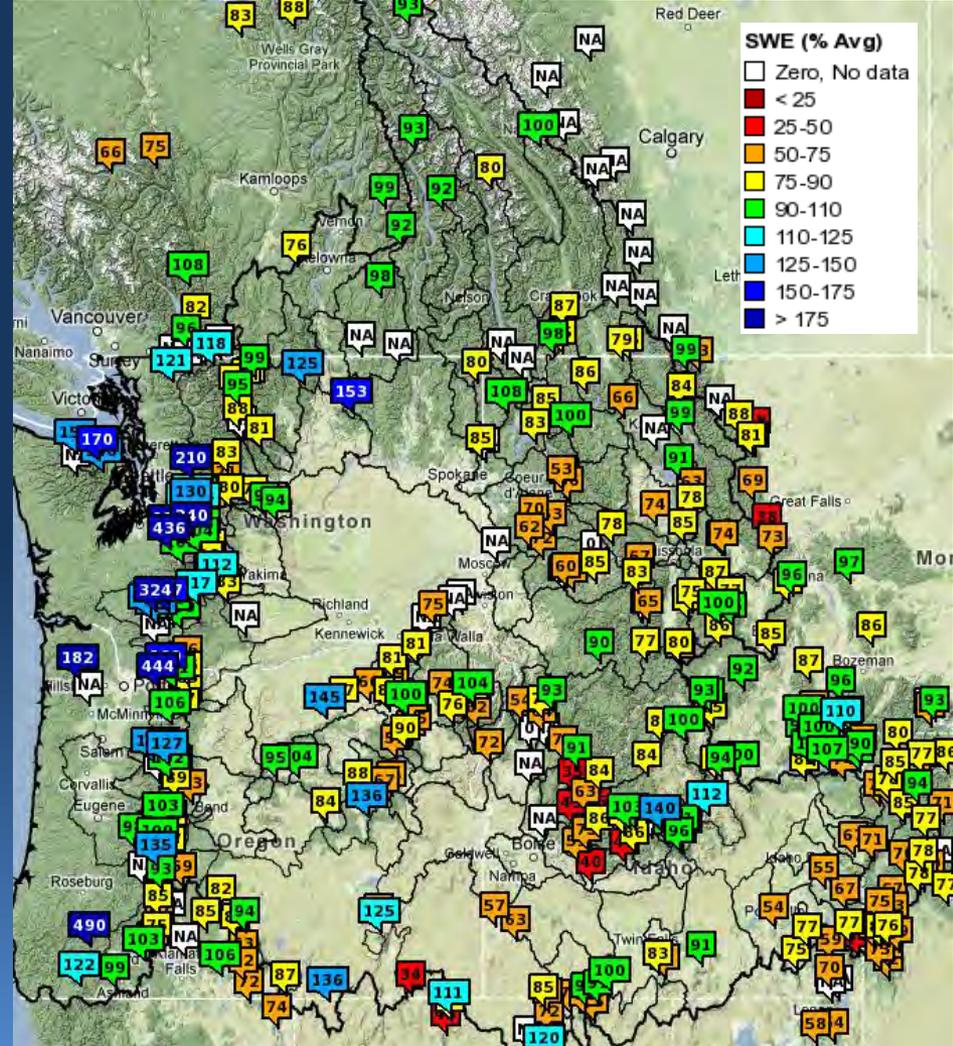
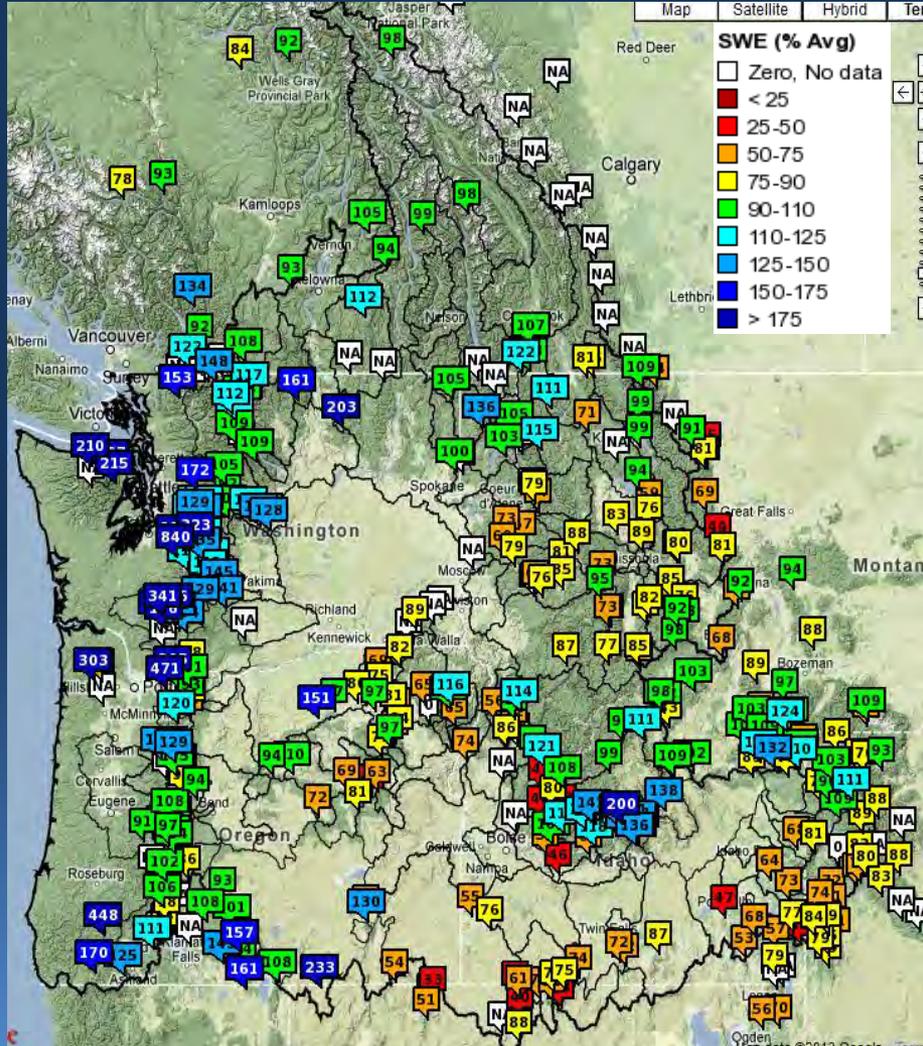


# Current Snow Conditions



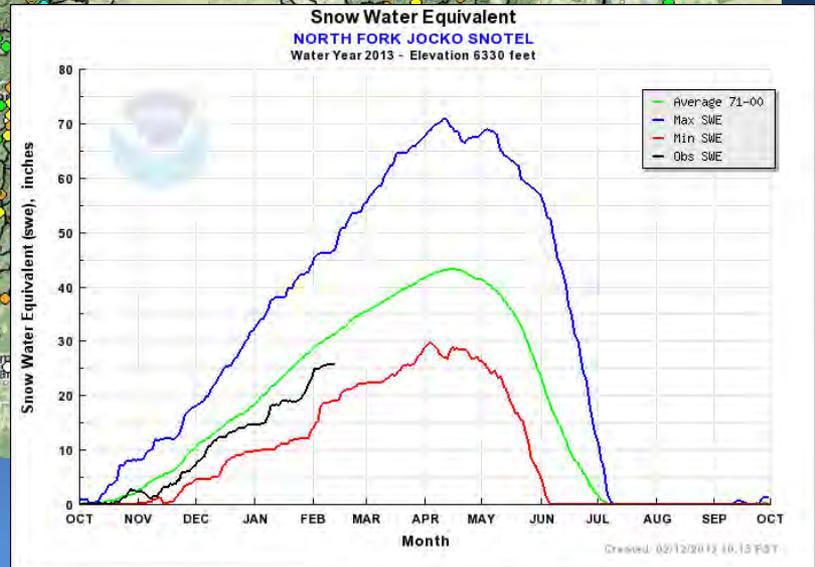
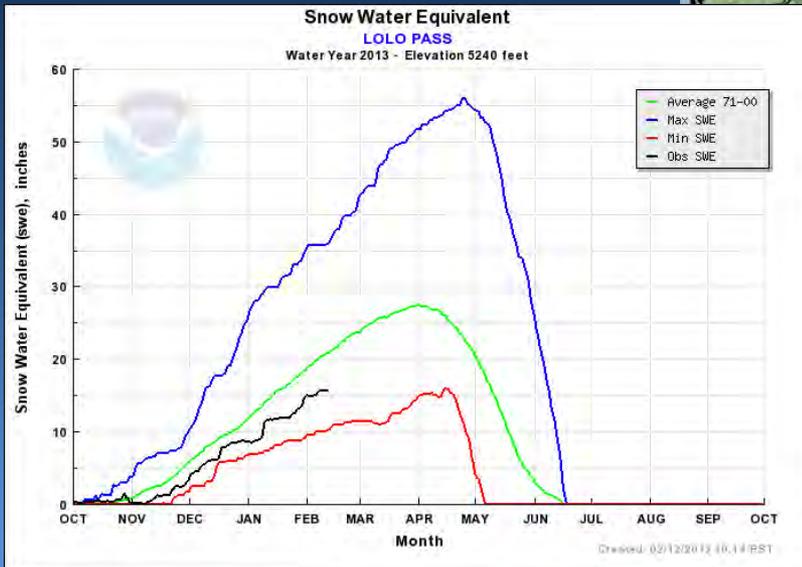
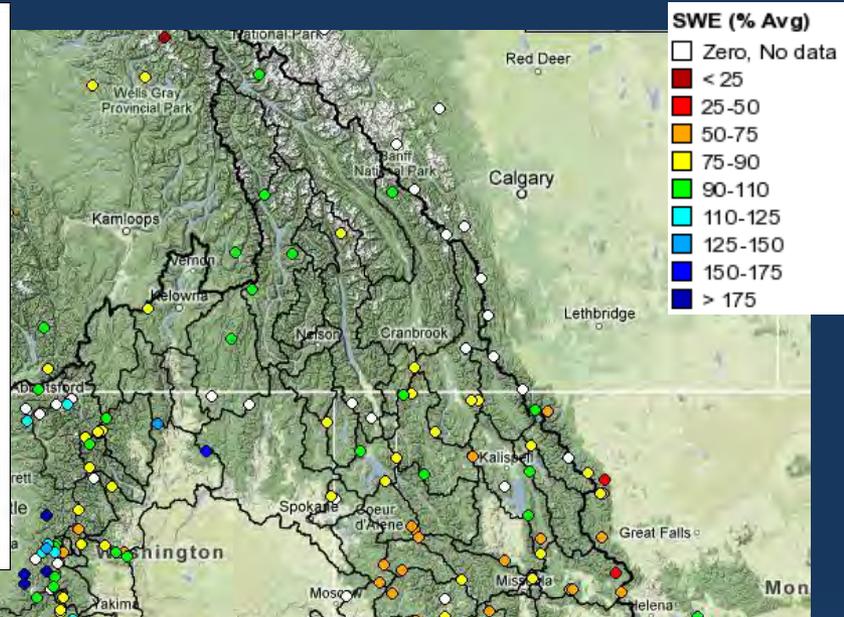
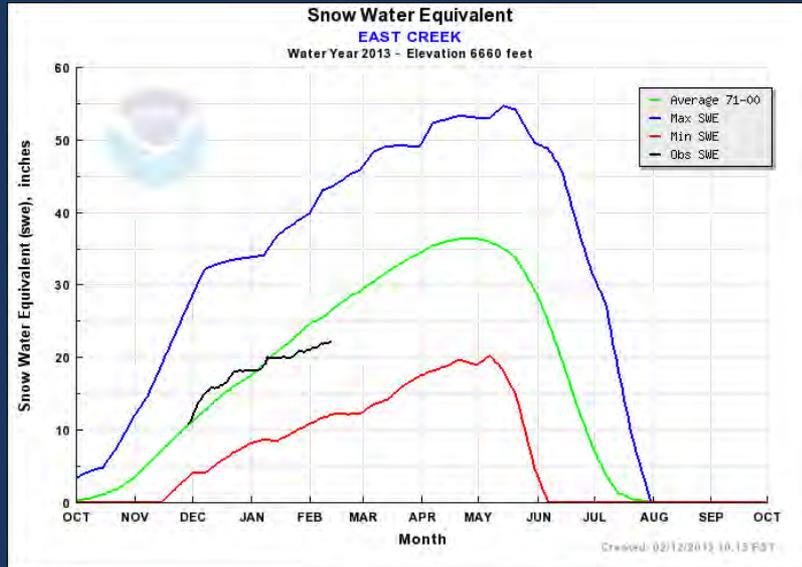
Jan 10, 2013

Feb 12, 2013



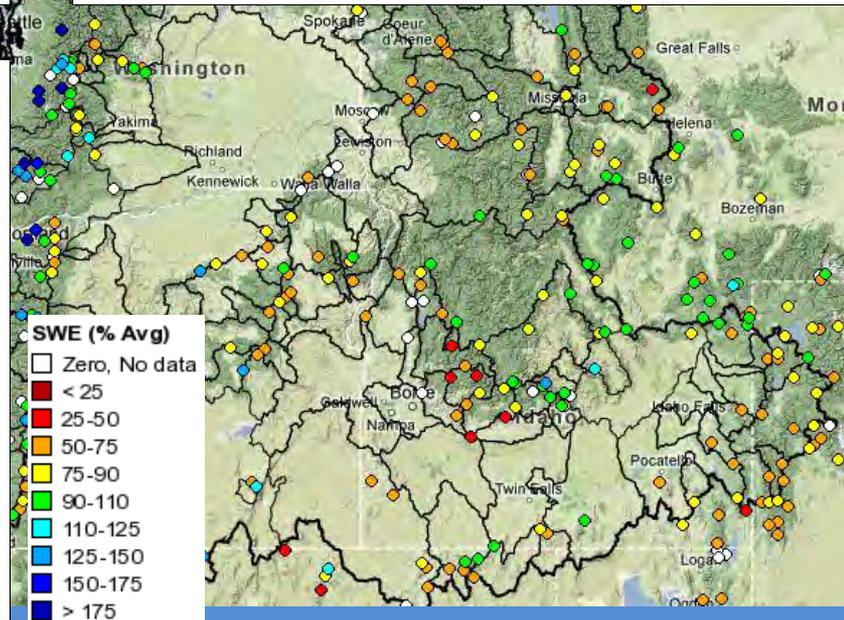
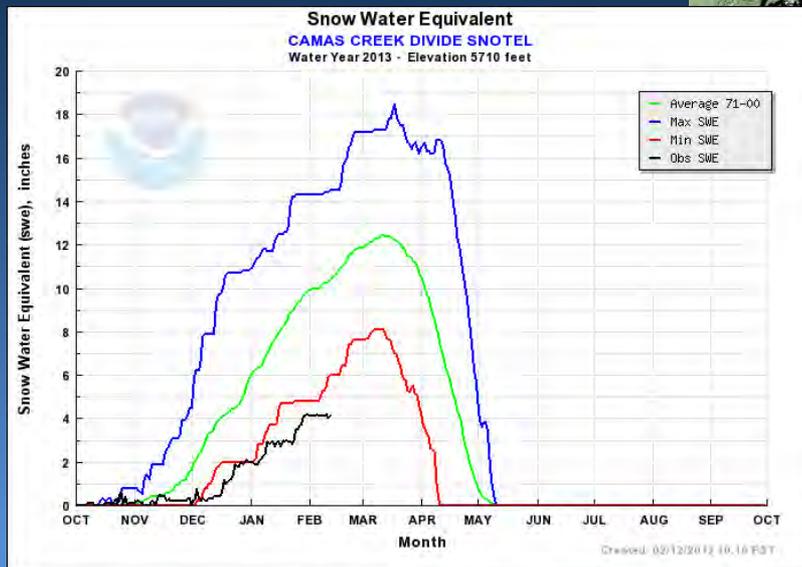
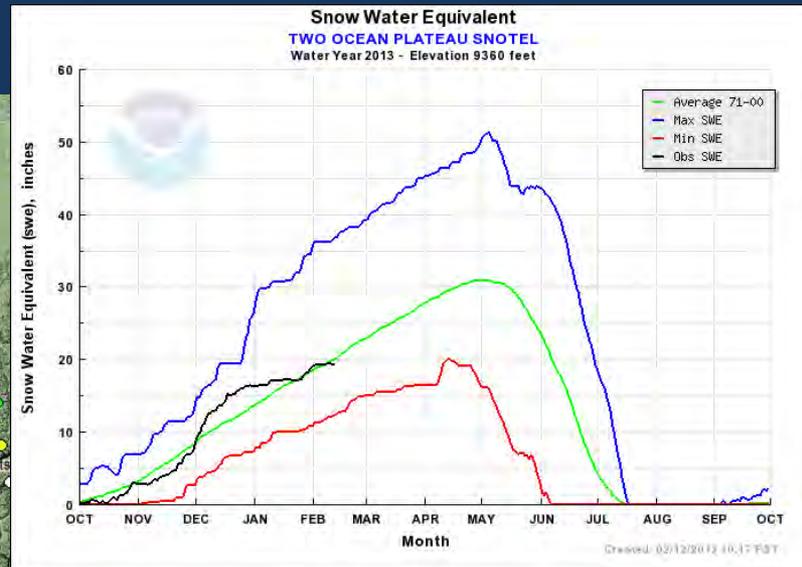
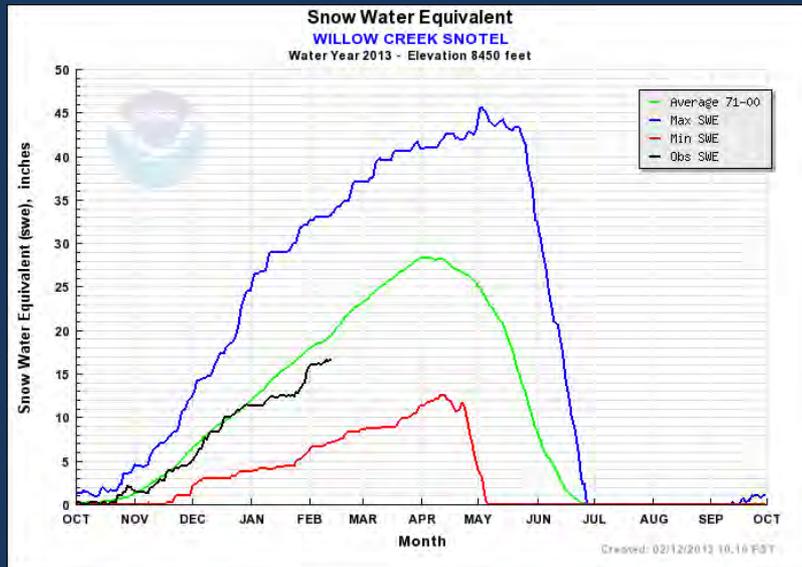


# Upper Columbia Snow Conditions





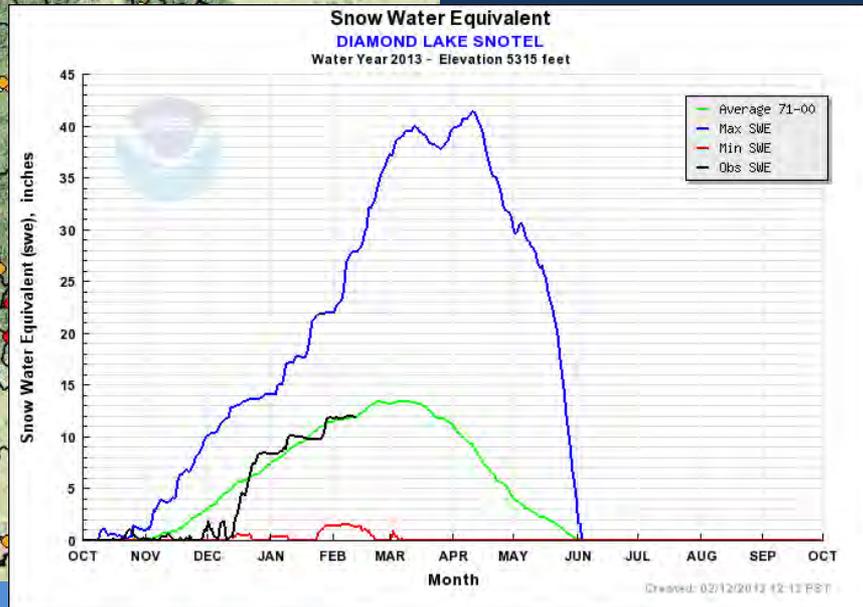
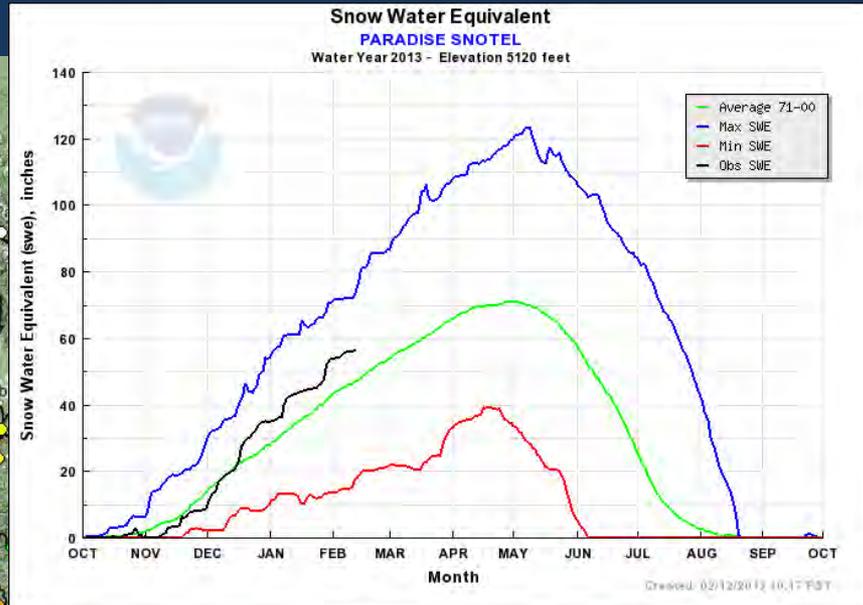
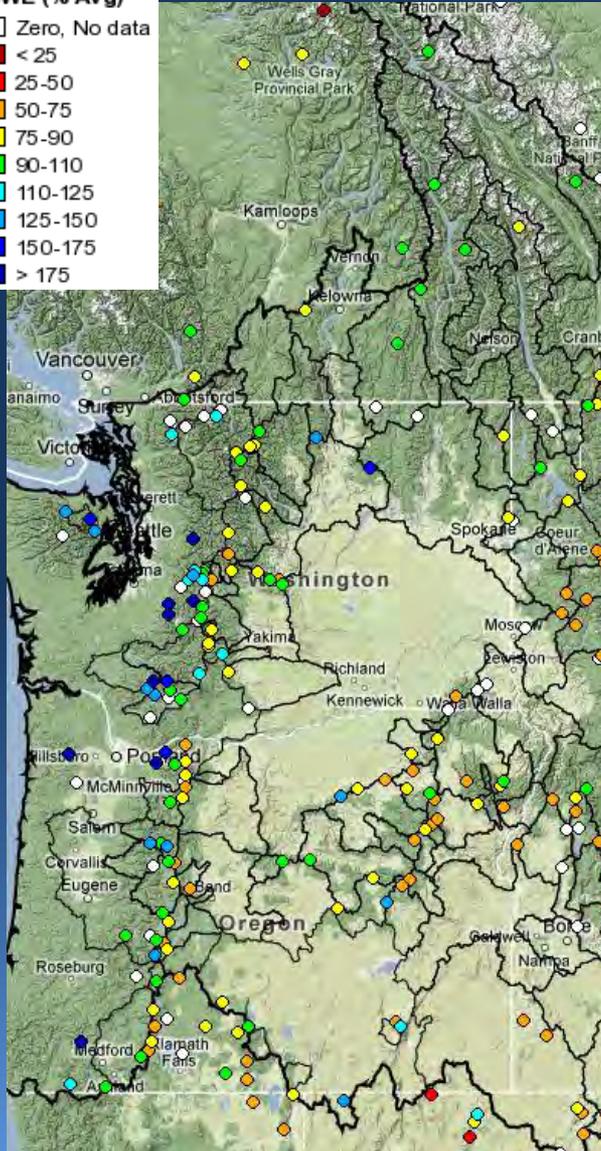
# Snake River Snow Conditions

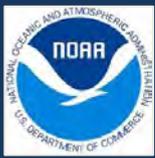


# Lower Columbia Snow Conditions

## SWE (% Avg)

- Zero, No data
- < 25
- 25-50
- 50-75
- 75-90
- 90-110
- 110-125
- 125-150
- 150-175
- > 175





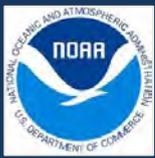
# Future Conditions



Climate Outlooks

10 Day Precipitation Forecast

Water Supply Forecasts



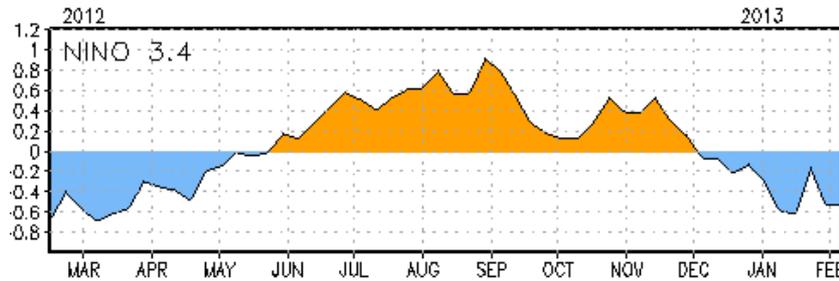
# Enso: Observed and Forecast

## SST Anomaly (Deg C)

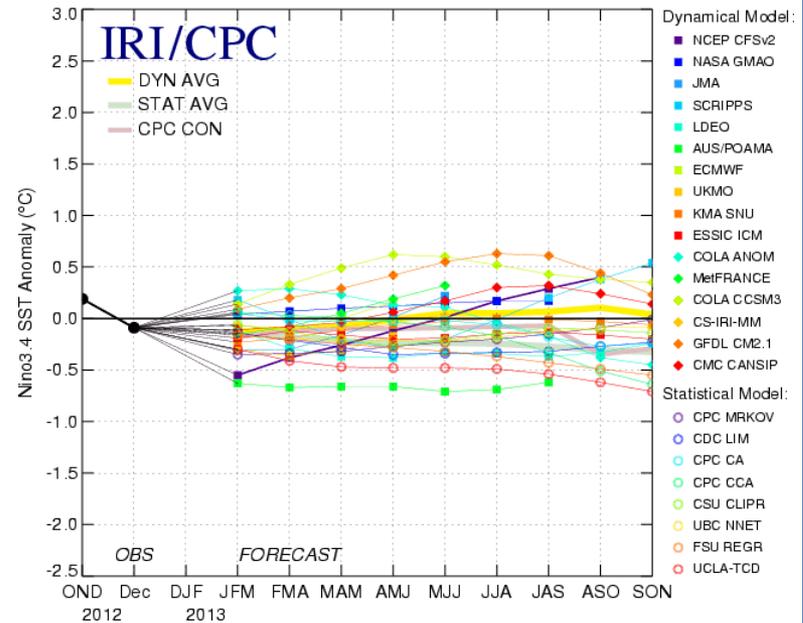


Latest observed: SST 3.4 ~ -0.5 Deg C

Latest calculated ONI 3.4 = -0.3 Deg C  
 ONI = 3 month running mean of SST (Nov-Jan)



Mid-Jan 2013 Plume of Model ENSO Predictions



**CPC Synopsis: ENSO-neutral conditions favored this winter and into spring 2013.**

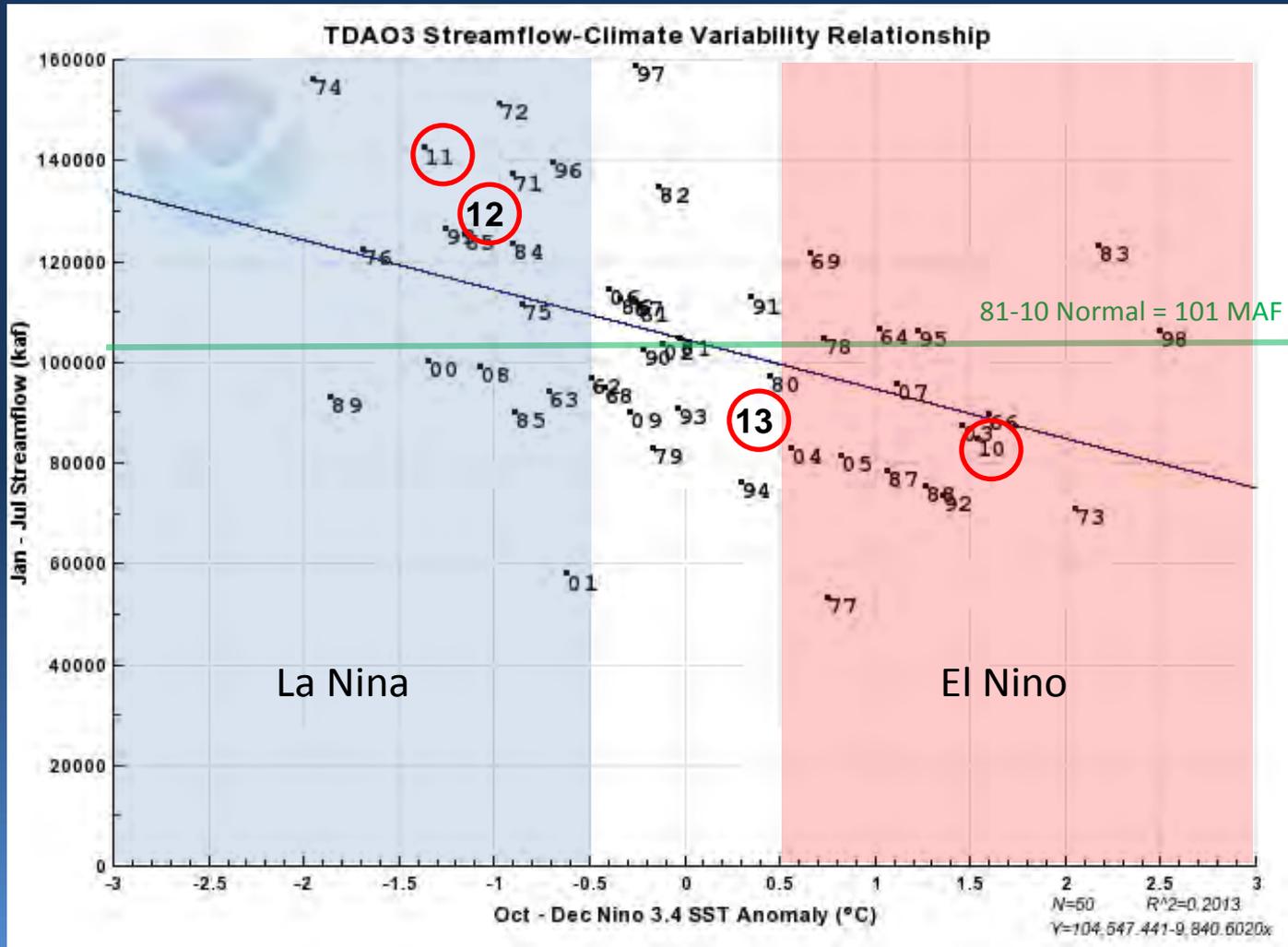
Source: Climate Prediction Center Weekly ENSO Update

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/lanina/enso\\_evolution-status-fcsts-web.pdf](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf)



# SST Anomaly vs Streamflow

## Columbia River near The Dalles

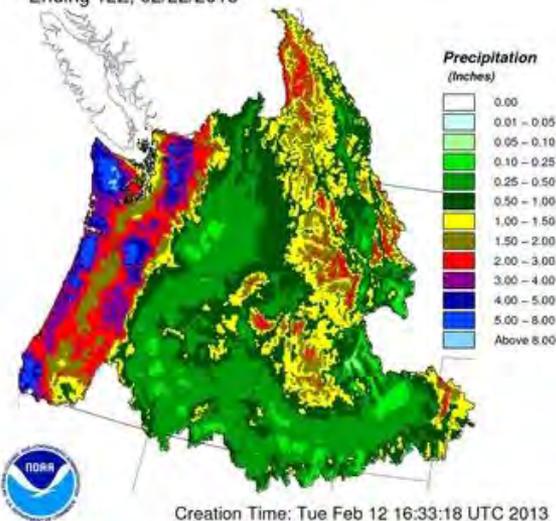




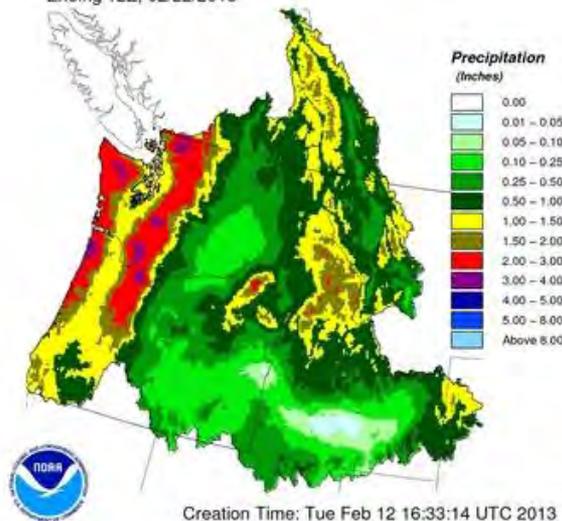
# ESP 10 Day Precipitation Forecast



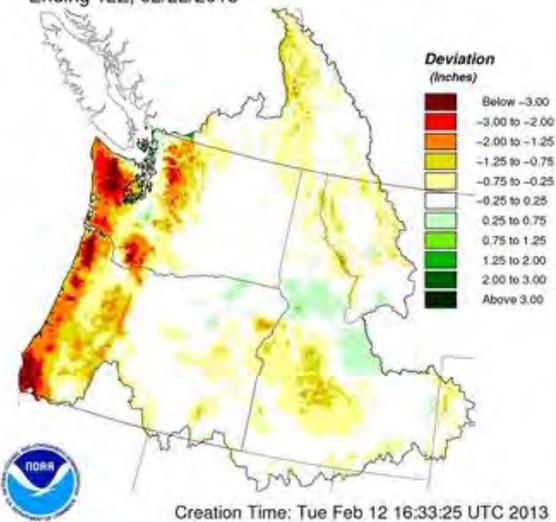
10 Day Precipitation Climatology  
Ending 12Z, 02/22/2013



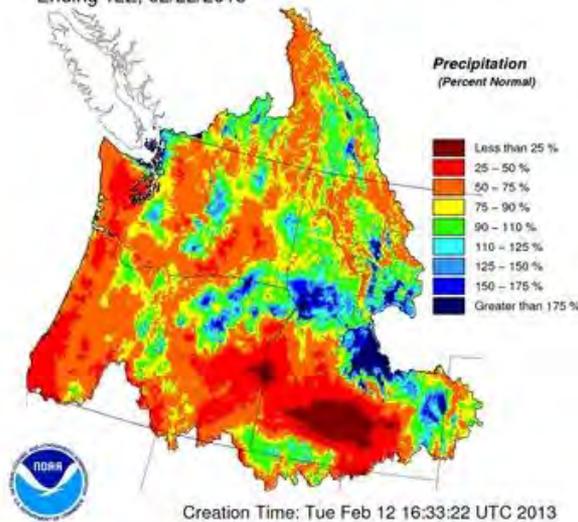
10 Day QPF  
Ending 12Z, 02/22/2013



10 Day QPF (Deviation from Climatology)  
Ending 12Z, 02/22/2013



10 Day QPF (Percent of Climatology)  
Ending 12Z, 02/22/2013

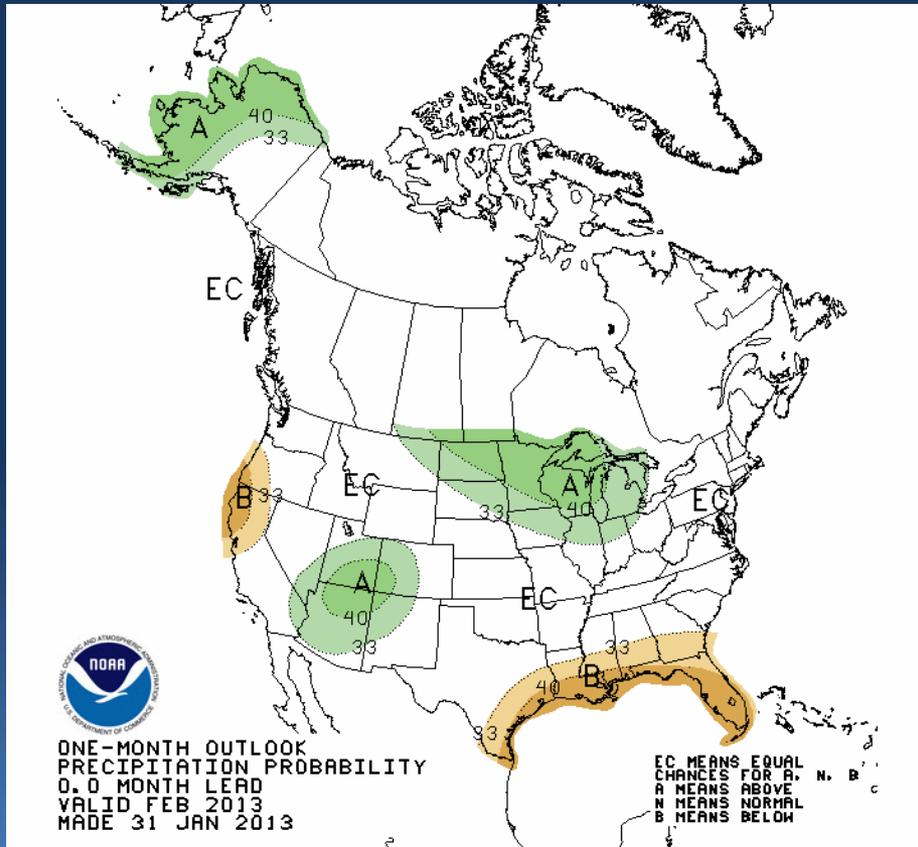




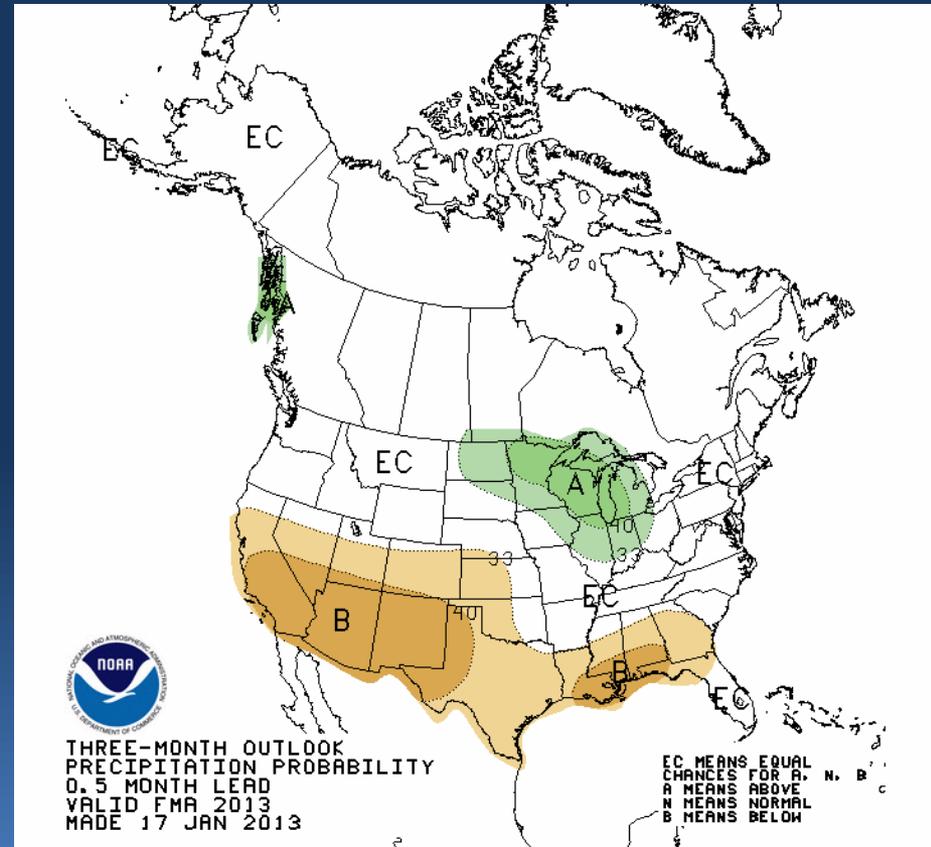
# Climate Outlook: Precipitation



## Current Month Outlook



## Three Month Outlook

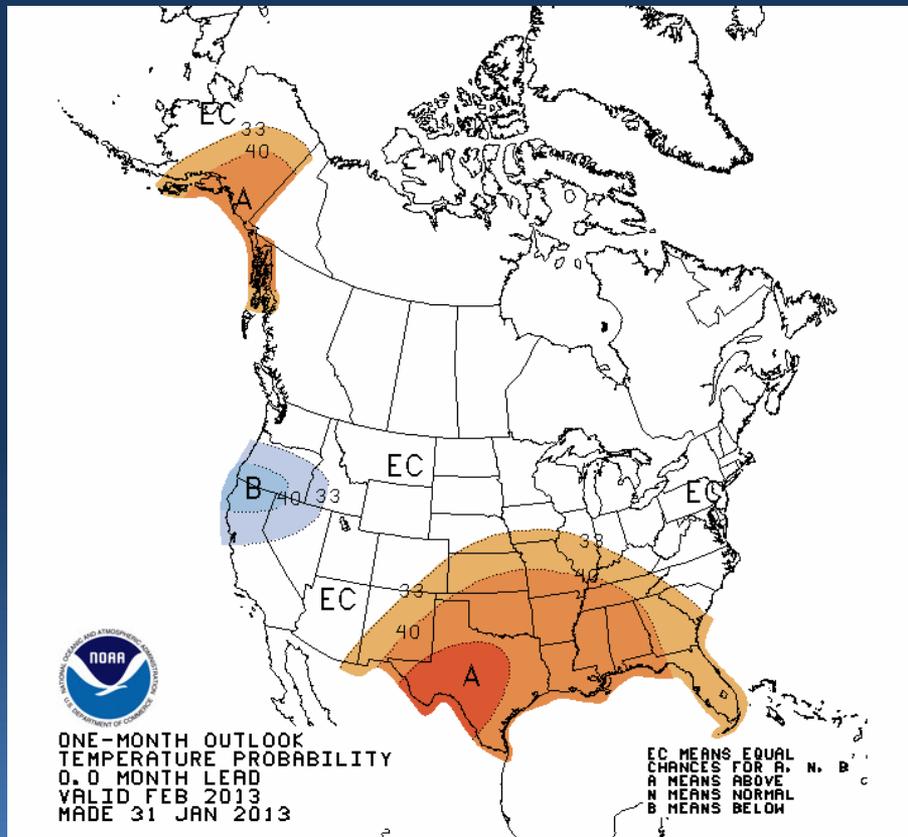




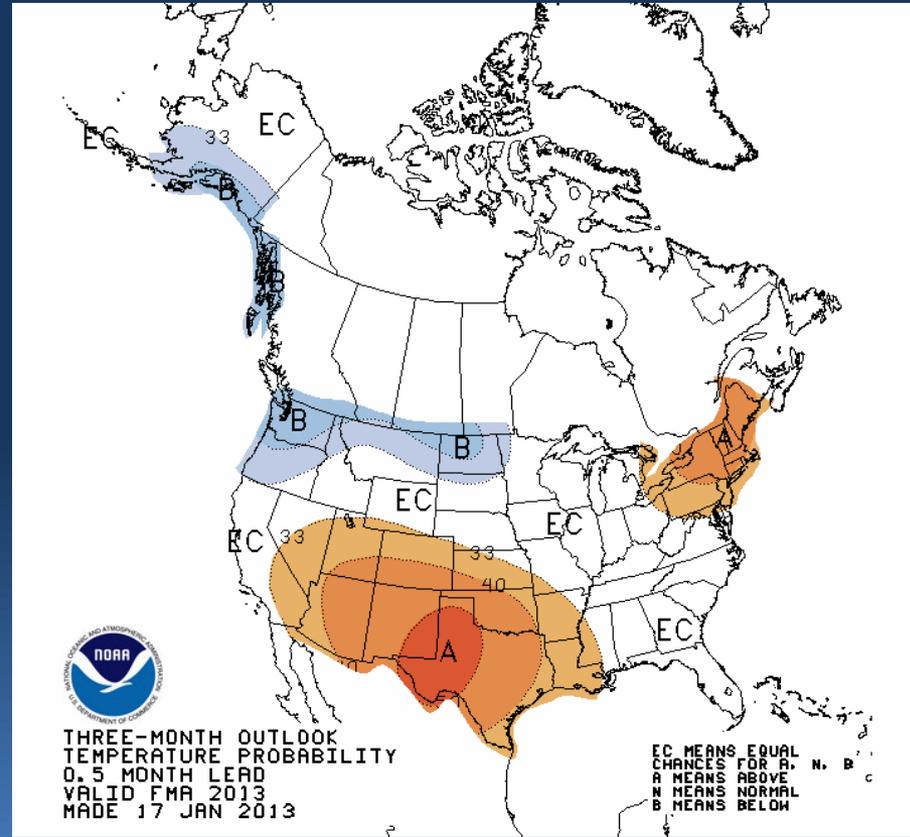
# Climate Outlook: Temperature



## Current Month Outlook



## Three Month Outlook



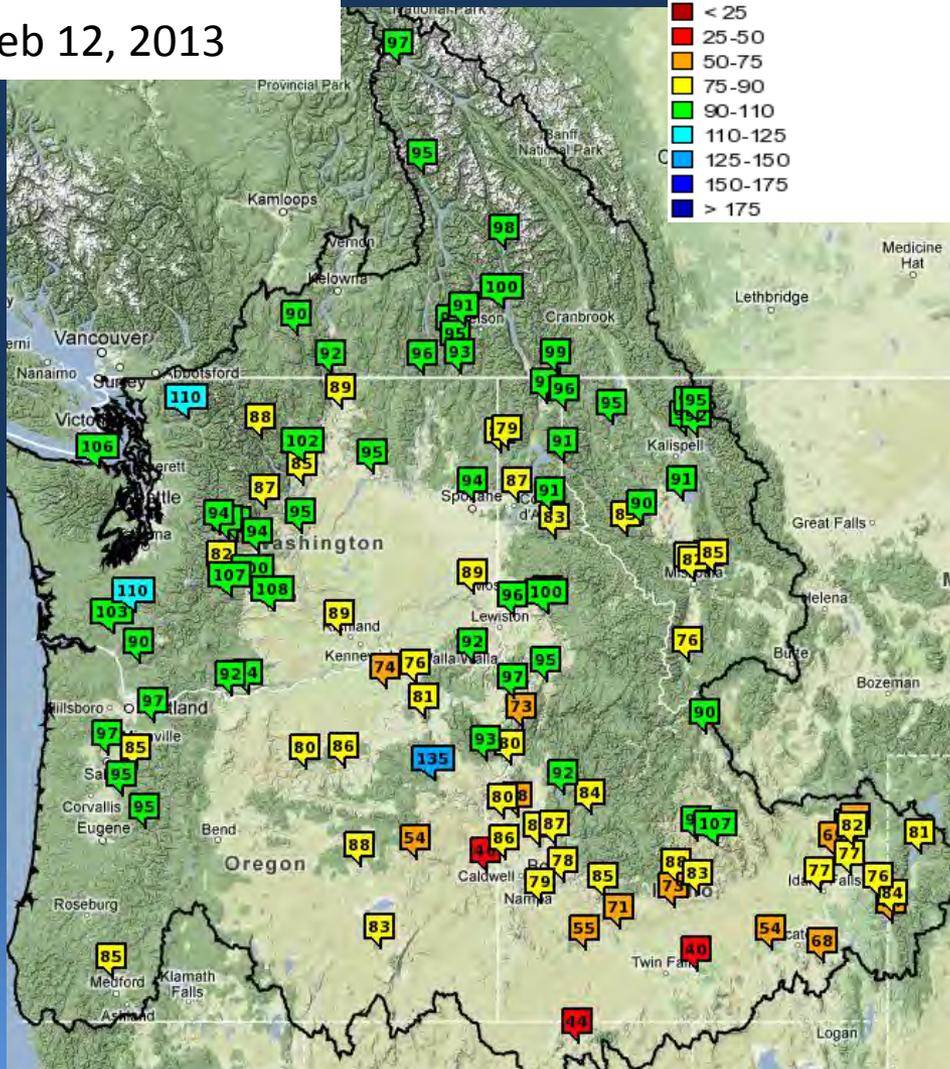
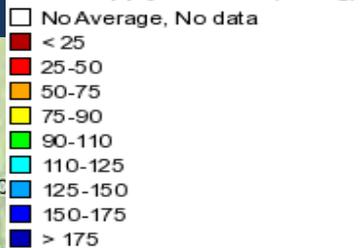


# Water Supply Forecasts



Issued  
Feb 12, 2013

### Water Supply Forecast (% Avg)



Ensemble Streamflow Procedure  
Feb 12 Issuance Date  
Feb 11 Ensemble Date

Official Forecasts include 10 days  
of forecast precipitation

NWRFC offers 3 and 0 day QPF  
(limited network and releases)

Forecasts updated weekly/daily  
All 10 day forecasts are 'official NWS'

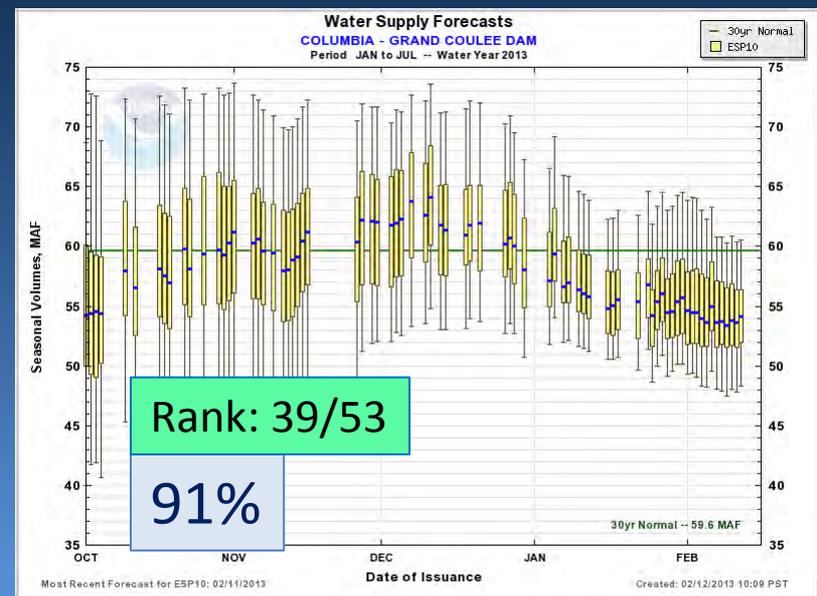
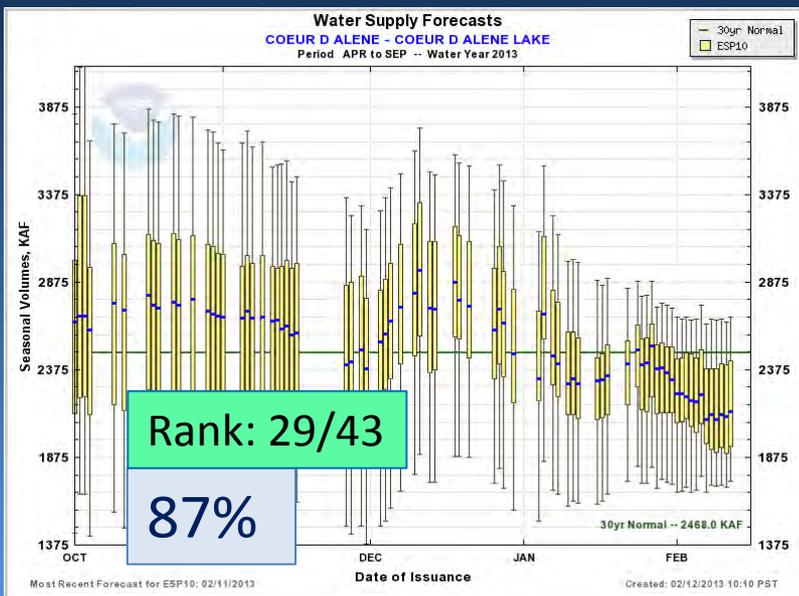
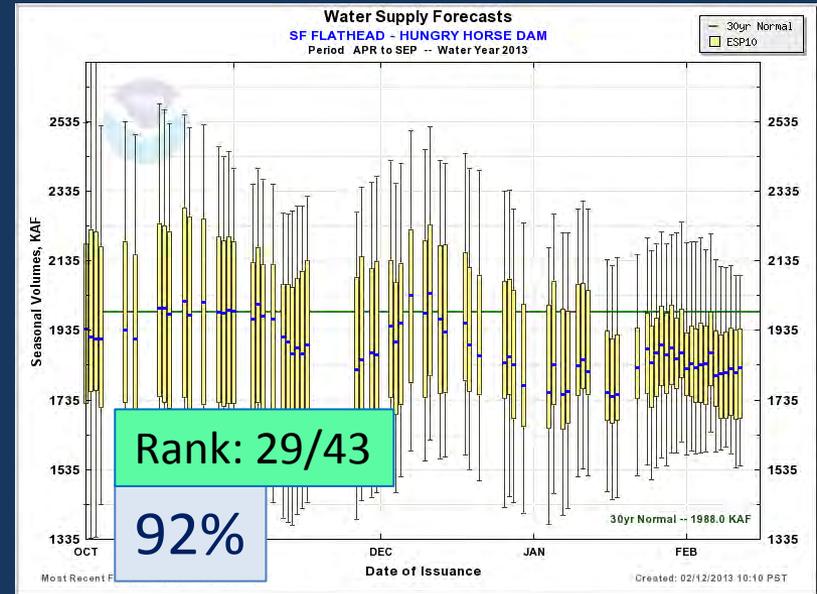
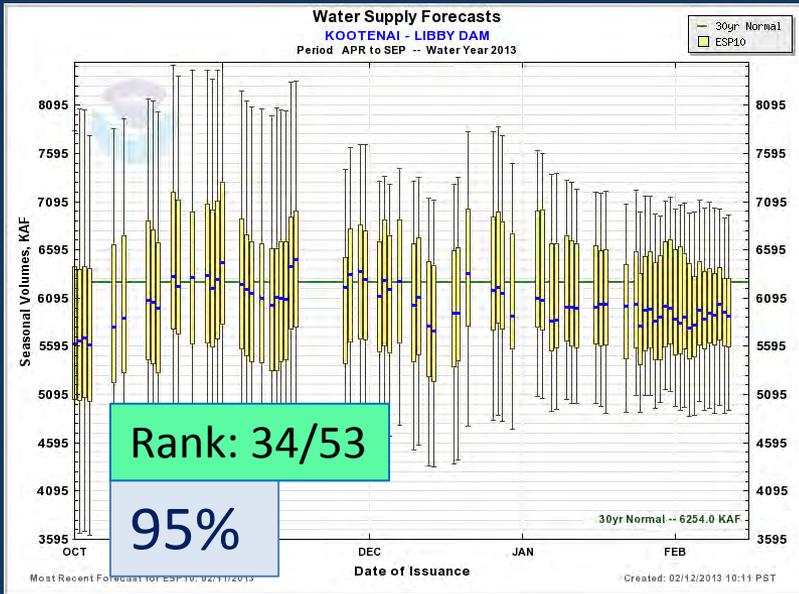
Agency Collaborated

Model States/Snow/Runoff updated  
continuously through month

Compared to 30 yr Runoff Normal  
(1981-2010)

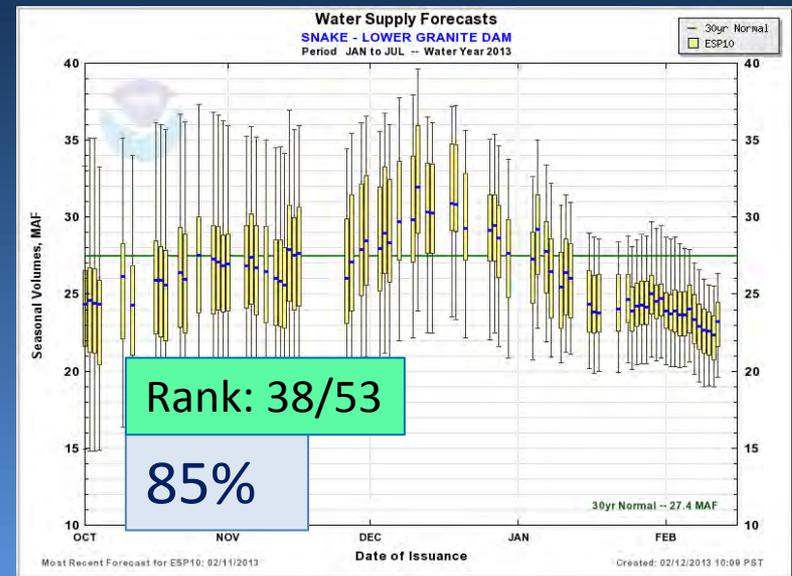
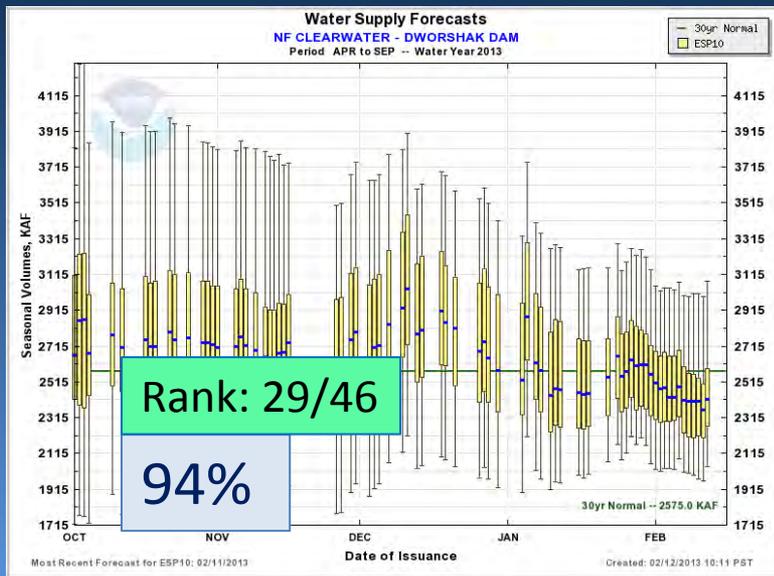
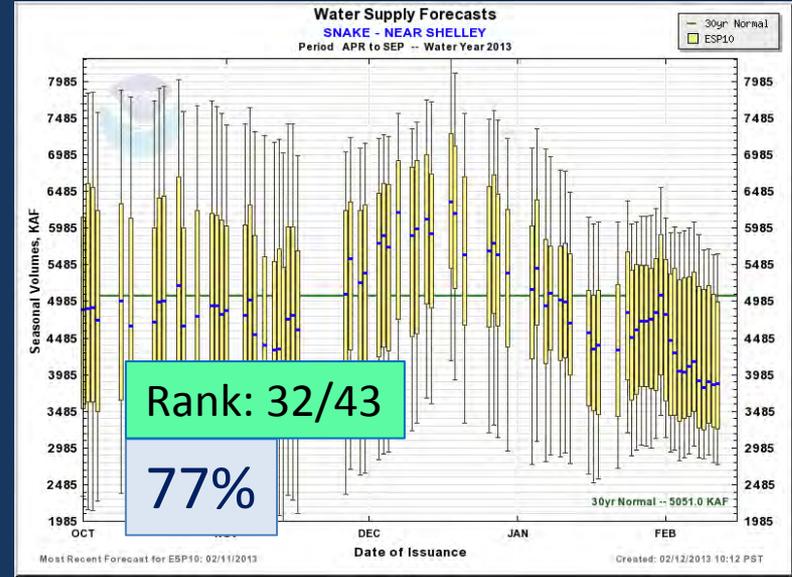
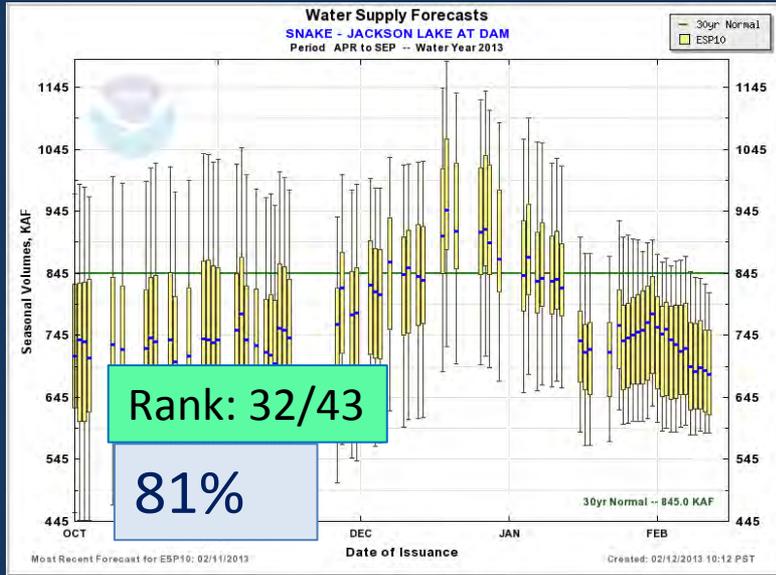


# Water Supply Forecast: Upper Columbia



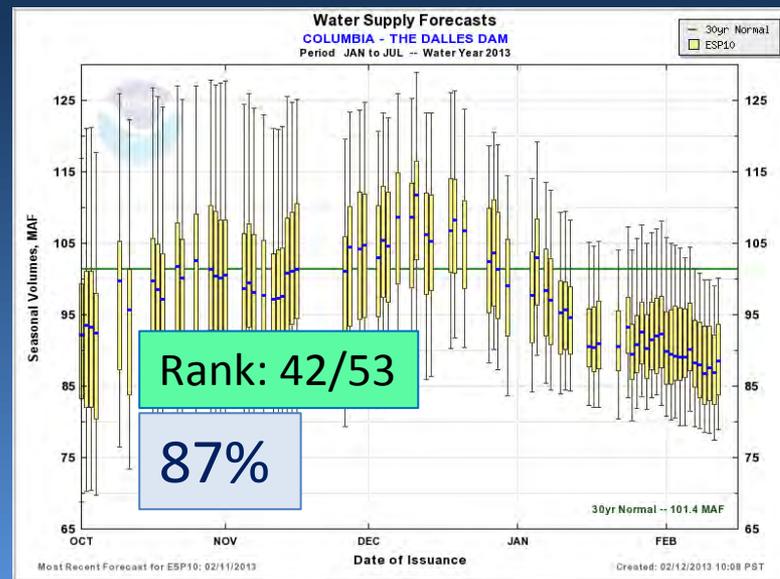
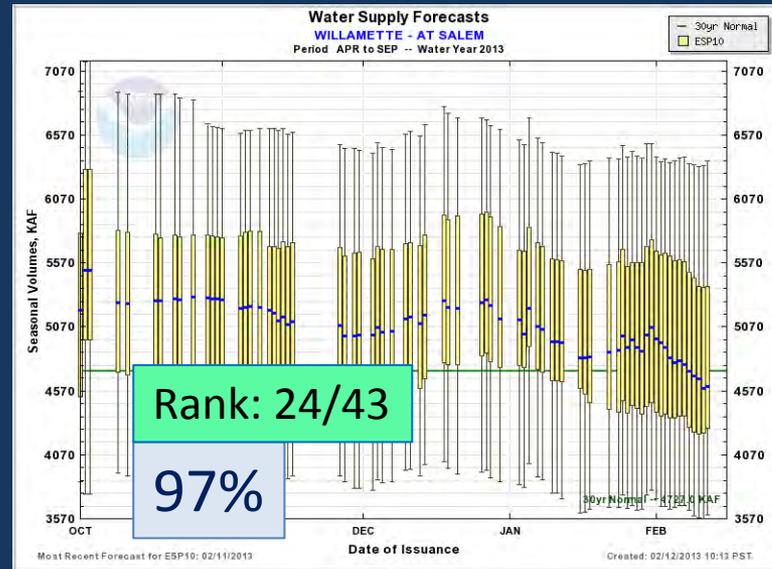
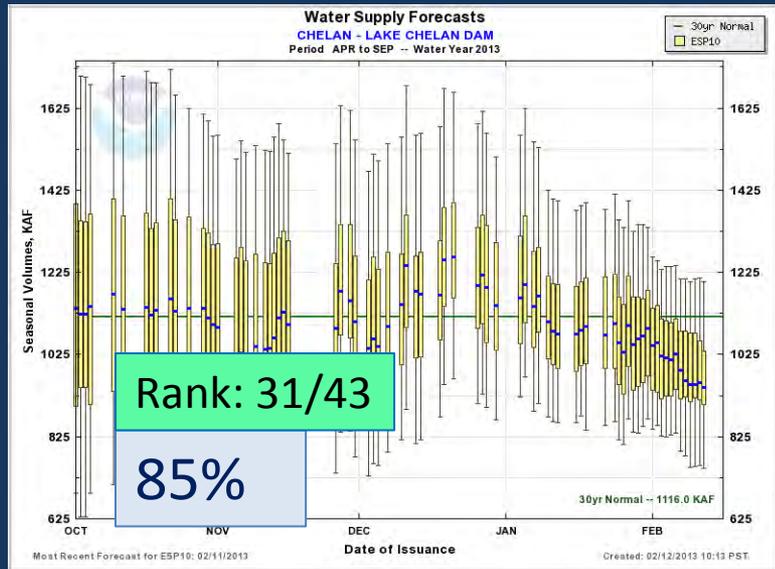


# Water Supply Forecast: Snake





# Water Supply Forecast: Lower Columbia





# NWRFC Water Supply Webpage

[http://www.nwrfc.noaa.gov/water\\_supply/ws\\_schd.cgi](http://www.nwrfc.noaa.gov/water_supply/ws_schd.cgi)



## 2013 Schedule for *Live Water Supply Briefings*

Jan	Feb	Mar	Apr	May	Jun
<b>10th</b>	<b>7th</b>	<b>7th</b>	<b>4th</b>	<b>9th</b>	<b>TBD</b>

*All presentations held at 10am PDT/PST, unless noted otherwise*

**[Click here for Registration Information](#)**

**[Archive of Previous Briefings](#)**

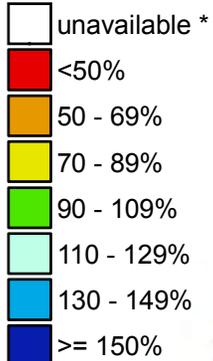
<http://www.nwrfc.noaa.gov/presentations/presentations.cgi>

Steve King, NWRFC  
Stephen.King@noaa.gov  
(503)326-7291

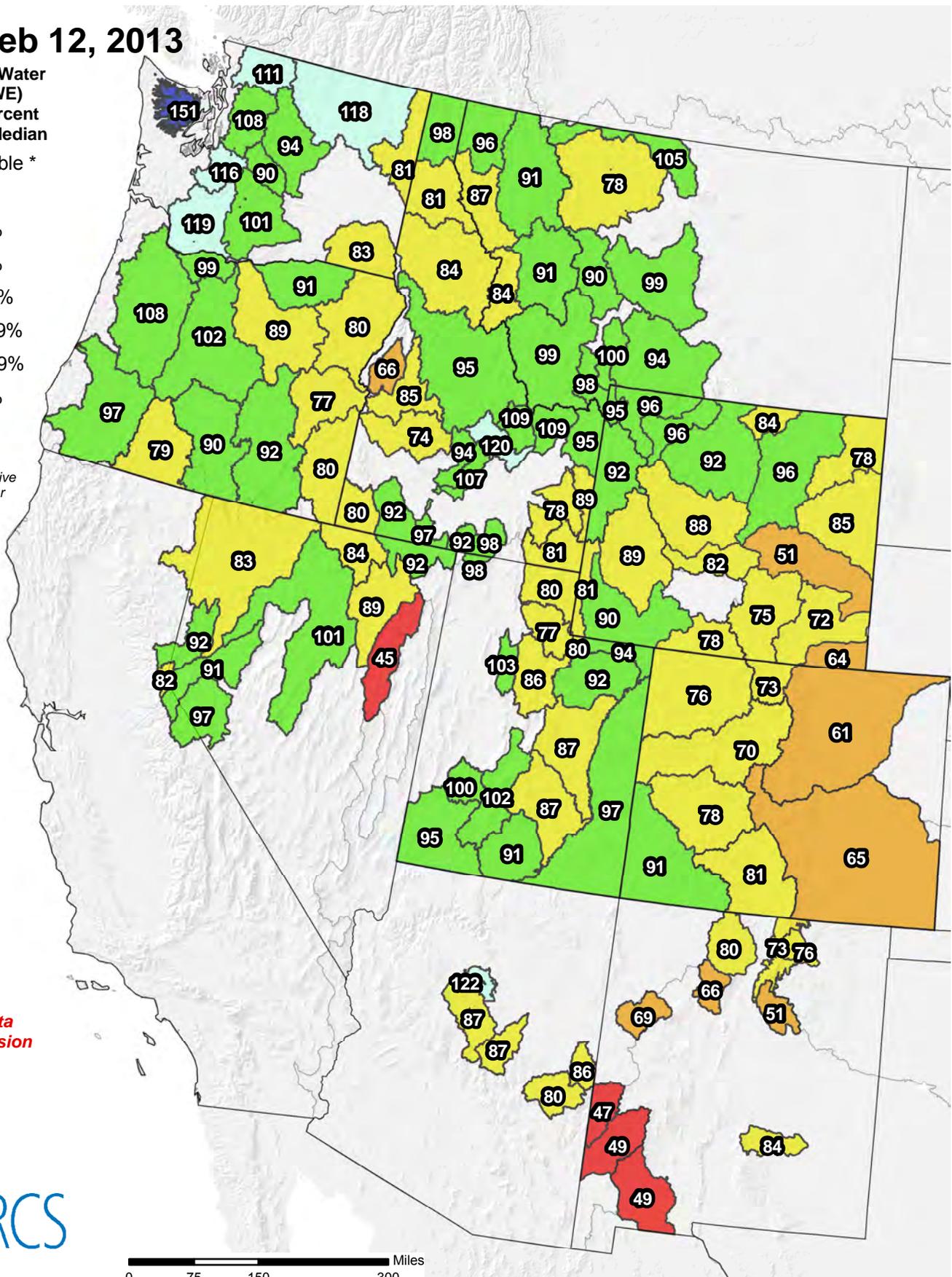
# Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

## Feb 12, 2013

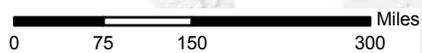
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



\* Data unavailable at time of posting or measurement is not representative at this time of year



Provisional data subject to revision



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>  
 Based on data from <http://www.wcc.nrcs.usda.gov/reports/>  
 Science contact: [Jim.Marron@por.usda.gov](mailto:Jim.Marron@por.usda.gov) 503 414 3047

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
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**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT CONFERENCE CALL

February 20, 2013 9:00am - 12:00pm

### CONFERENCE CALL INFORMATION

Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 7396

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Please MUTE your Phone**

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Please e-mail her at [rgumpert@cnnw.net](mailto:rgumpert@cnnw.net) or call her at (503) 248-4703.*

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## AGENDA

1. Welcome and Introductions
2. Chum Operation - John Roache - BOR, Tony Norris - BPA, and Doug Baus - COE-NWD
3. Other
  - a. Set agenda and date for next meeting - **February 27, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Doug Baus](#) at (503) 808-3995*

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

February 20, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Chum Operations Update**

A conference call was convened today to look at current conditions and determine an operation for chum moving forward. John Roache, Reclamation, reported that currently the action agencies are operating to meet a 13.5 foot tailwater elevation below Bonneville, using storage out of Grand Coulee. While the preferred operation is to meet the chum need and reserve enough storage at Grand Coulee for spring migrants, this year, a significant draft would be needed (4 feet last week) to continue to meet the current chum target. The Dalles water supply forecast continues to drop, now 5 more MAF below the February final forecast. Next week's forecast shows a potential storm or two, but still water supply is below average – and the same 14 days out. The action agencies recommended lowering the chum tailwater elevation to an 11.5-12 foot range in order to have more Grand Coulee storage for use during the spring.

Paul Wagner, NOAA, shared the salmon managers' priority to meet the April 10 upper rule curve at Grand Coulee for the spring migration. The 13.5 foot tailwater elevation this year was a product of excess November precipitation, and now maintaining for the benefit of redds at that higher level. Though it is uncertain how many redds were spawned at that elevation, Paul said 50-70% of all spawning likely occurred after November 28 when the higher tailwater elevation operation began, so likely some spawning at that elevation did occur. Given meeting both this higher elevation and the upper rule curve at Grand Coulee is no longer an option, the salmon managers looked at the WMP for guidance:

- *What percentage of fish are there?* Paul said likely about 50% that spawned in the Ives/Pearce area did so at the higher elevation. Many fish used the newer spring channel and we saw significant spawning there.
- *Emergence timing based on temperature units.* We don't know temperature at higher elevations, but there is a range of possibilities and it is a dynamic situation. There could be as few as 450 temperature units (eggs not ready to emerge) or as many as 800 tu's which is about two weeks away from emergence.

Paul concluded that, given all the uncertainty with fish numbers, emergence timing and weather forecasts, the salmon managers were ok with a phased step down to a lower tailwater elevation and proposed a specific operation for the next week:

Lower the tailwater elevation to 13 feet today; lower to 12.5 feet on 2/22; to 12 feet on 2/24; and on 2/26 step down to 11.8 feet. In addition, bring the tailwater elevation back up to 13.5 feet for 1-2 hours during each day as an interim measure over this next week. He reiterated that the overriding objective is to meet the upper rule curve on April 10 at Grand Coulee, and given the drier forecasts, the salmon managers recognize the need to make a change to the chum operation. Also other measures have been taken to provide some protection to the chum, aside from maintaining the 13.5 foot tailwater elevation.

**Action/Planned Operation:** The action agencies agreed that the salmon managers' proposed step down and re-wetting approach is reasonable for the next week. BPA's Tony Norris said he hoped the re-wetting will meet the intended purpose and noted that this will need to be revisited next week. The Corps' Doug Baus added that the forecast information aligns with the other two action agencies. The Corps will implement the above described operation. Rewetting will occur for 1 hour each day between 2100-0600 hours (targeting approximately 24 hours between each re-wetting period) for the next week. TMT will revisit this operation next Wednesday, 2/27.

**Next Meeting – 2/27 Conference Call**

Agenda items include:

- Chum Operation
- Other?

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

February 20, 2013

Notes: Pat Vivian

#### **1. Introduction**

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of the COE, NOAA, BPA, BOR, Washington, Salish Kootenai Tribe, CRITFC/Umatilla Tribe, Idaho, USFWS, Nez Perce Tribe and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### **2. Chum Update**

The current operation to maintain 13.5 feet elevation in the Bonneville tailwater for chum is placing a heavy draft on Grand Coulee at the rate of 0.5-1.0 feet per day, John Roache, BOR, reported. Last week this meant an elevation loss of 4 feet at Coulee. It is becoming evident that continued maintenance of the 13.5 foot chum tailwater elevation below Bonneville would have a probable negative impact on meeting the April 10 elevation objective for spring migrants. Meanwhile, the water supply forecast for The Dalles continues to drop. In light of the current outlook, BOR recommends lowering the Bonneville tailwater to the 11.5-12 foot range.

NOAA recognizes the necessity of this recommendation, Paul Wagner said. Meeting the April 10 elevation target is a higher priority than chum if a choice must be made. The Ives Island area was so inundated with high flows this year it was impossible to observe actual spawning. The WMP spells out issues to consider in situations such as this. In previous years, several hundred chum have spawned in the Ives Island area, a rate that's assumed to be similar this year. The spawning area at 13.5 feet elevation is assumed to have been available for around 50% of the run this year.

Another consideration is emergence timing based on temperature units (TU), Wagner said. Because there are currently no gages at 13.5 feet elevation, the accumulation of TU's to date is only an estimate. Somewhere between 400 and 800 TU's could have accumulated, which makes a difference of 2 weeks in the emergence date.

Given that that 10 day water supply forecast continues to decline, NOAA recommends ramping the Bonneville tailwater elevation down by half a foot every other day, with a bottom elevation of 11.8 feet. Wagner said FPAC has already bought into this approach because it would maintain the eggs spawned at elevation 11.5 feet or lower by providing a buffer for gas due to construction and spill during installation of the lamprey structure.

Since the FPAC meeting, Wagner made an additional recommendation to rewet the redds every 24 hours. The intent of rewetting is to keep eggs that may not yet have hatched alive for another week while potentially benefiting fish that have already hatched. There was discussion of how frequently and long the Bonneville tailwater elevation would need to return to 13.5 feet to rewet the redds successfully, and whether the rewettings absolutely must occur every 24 hours.

Tony Norris, BPA, emphasized that water is scarce, and any conservation measure taken now will increase the likelihood of meeting April 10, which isn't guaranteed even with changes in the chum operation. An hour of rewetting should be sufficient to allow the eggs to survive, and an interval of a few more hours than 24 between rewettings would not be a problem, Wagner replied. Norris asked whether a ramp down rate of 0.5 foot per day in the Bonneville tailwater elevation would work and Wagner said no, it's preferable to drop the elevation 0.5 foot every other day.

Roache said the NOAA proposal seems reasonable in light of the current situation. Baus clarified that the rewetting operation will need to take place during non-diving hours (2000-0600 hours) in light of the lamprey installation underway.

Baus outlined how the COE will operate Bonneville for chum over next week. Effective today, the Bonneville tailwater elevation will drop from 13.5 to 13 feet, with a one-hour rewetting to 13.5 feet elevation approximately every 24 hours. On February 22, the tailwater elevation will drop to 12.5 feet with a daily rewetting; on February 24, it will drop again to 12.5 feet, also with a daily rewetting. Finally, on February 26, it will drop to 11.8 feet, the bottom elevation for the coming week until TMT meets again to discuss the chum operation.

### **3. Next TMT Meeting**

There will be a TMT conference call February 27 to check in on the chum operation at Bonneville. The next regular TMT meeting will be March 13.

<b>Name</b>	<b>Affiliation</b>
Paul Wagner	NOAA
Charles Morrill	Washington
Tony Norris	BPA
John Roache	BOR
Doug Baus	COE
Lisa Wright	COE
Bill Proctor	COE
Stu Leavitt	Salish Kootenai Tribe
Scott Bettin	BPA
Tom Lorz	CRITFC/Umatilla Tribe
Russ George	WMC
Don Tinker	SCL
Dave Benner	FPC

Barry Espensen  
Richelle Beck  
Russ Kiefer  
Trevor McKee  
Pete Lyman  
Mike Shapley  
David Wills  
Dave Statler

CBB  
Grant PUD  
Idaho  
Trans Alta  
PGE  
Snohomish PUD  
USFWS  
Nez Perce Tribe

# TECHNICAL MANAGEMENT TEAM

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**WDFW:** Charles Morrill  
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**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT CONFERENCE CALL

February 27, 2013 9:00am - 12:00pm

### CONFERENCE CALL INFORMATION

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Security Code 6637

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## AGENDA

1. Welcome and Introductions
2. Chum Operation - Doug Baus, COE-NWD and Paul Wagner, NOAA Fisheries
3. PSMP Update - Doug Baus, COE-NWD and Richard Turner, COE-NWW
  - a. [PSMP and EIS](#)
  - b. [Immediate Need](#)
  - c. [Comments](#)
4. Other
  - a. Set agenda and date for next meeting - **March 6, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:*

[Doug Baus](#) at (503) 808-3995

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

February 27, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Chum Operations Update**

A conference call was convened today to look at current conditions and determine an operation for chum moving forward. Doug Baus, Corps, reported that the operation set up during last week's TMT call had been achieved, with a gradual step down to a minimum 11.8 foot tailwater at Bonneville as of yesterday – with daily one-hour increments of bringing the tailwater back up to 13.5 feet to re-wet any redds that had been spawned at that higher elevation. Doug said currently, the tailwater was 11.9 feet and Bonneville was releasing 132 kcfs. John Roache, Reclamation, added that since the operation had been implemented, Grand Coulee was no longer being drafted to meet the chum flows.

Paul Wagner, NOAA, said the salmon managers had discussed and agreed to continue the operation for another week – at an 11.8 foot minimum tailwater with 1-hour increments per day up to 13.5 feet for re-wetting. Paul said assuming there were live chum at the higher elevation, the existing temperatures would be helping with quicker growth. He also said Battell will provide more precise temperature exposure data to understand the status of redds that were laid down prior to 11/28 (after which flows, and the tailwater at Bonneville, were higher), and this could inform next week's discussions.

**Action/Planned Operation:** The action agencies agreed to continue with the current operation, maintaining a minimum 11.8 foot tailwater at Bonneville, and Doug Baus said the 1-hour re-wetting period will occur between 2100 and 2400 hours.

### **PSMP Update**

Doug Baus, Corps, said today's presentation was intended to provide an overview of the process and schedule for developing the EIS and Programmatic Sediment Management Plan for the Lower Snake. A separate process for commenting on the Corps' draft is available to the public until March 26.

Richard Turner and Sandy Shelin, Walla Walla District Corps, provided information about the process and an overview of the draft plan. Study results, based on a collection of work done by various state and federal agencies and universities, showed that:

- More sediment is being transported by rivers now than in the 1970s
- 80% comes from the Snake River drainage and 20% from the Clearwater River
- The Salmon River delivers the most sediment compared to all basins

- Dominant sediment sources in the watershed are from landslides and burned lands from forest fires
- There is no practical or feasible strategy to reduce sediment loads from dominant sources
- Agricultural land erosion is minor input to the reservoirs

Potential tools in the tool box identified for addressing sediment issues include dredging, structured sediment management, system management and sediment reduction. The Corps analyzed seven alternatives, narrowed that down to 3, and now has identified a preferred alternative, which is a comprehensive use of the entire tool box.

To meet an immediate action requirement for navigation, dredging is the only option – and this will occur in Winter 2013-2014. Dredging will occur in four areas: Ice Harbor downstream navigation lock, areas around the Port of Clarkston, and the Port of Lewiston. The Corps has identified Knoxway Canyon as the inriver disposal site.

Richard concluded the presentation identifying process next steps:

- Public comment period ends, 3/26
- Comments should be sent to [psmp@usace.army.mil](mailto:psmp@usace.army.mil)
- Corps response to comments
- Corps releases a final EIS/PSMP for public review, Summer 2013
- ROD, Fall 2013
- Implementation, first available in-water work window
- Develop long term solutions

The Corps expects to complete all dredging within one in-water work window, and will develop environmental compliance documentation for every proposed action, including consultation via ESA, CWA and Cultural Heritage Management requirements.

### **Next Meeting – 3/6 Conference Call**

Agenda items include:

- Chum Operation
- Other?

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

February 27, 2013

Notes: Pat Vivian

#### **1. Introduction**

Today's TMT conference call was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of BPA, BOR, NOAA, COE, Colville Tribe, CRITFC/Umatilla Tribe, Idaho, Washington, Montana and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### **2. Chum Operations Update**

At last week's meeting, TMT coordinated a ramp down from 13.5 feet elevation in the Bonneville tailwater to 13 feet elevation as of February 20, with a gradual ramp down to 11.8 feet elevation as of February 26, Baus recalled. The ramp down included one-hour redd rewetings to 13.5 feet elevation approximately every 24 hours. As of 6 am today, Bonneville was releasing 132 kcfs in order to maintain the tailwater elevation at 11.9 feet, with a plan of continuing the same operation.

After considering current conditions, FPAC is recommending that the current operation continue for another week, Paul Wagner, NOAA, reported. The 10 day water supply forecast does not justify a return to 13.5 feet elevation below Bonneville around the clock, nor does it indicate a need to change the current chum operation. There are still fish alive at 13 feet elevation, and the absence of surface water to cool these redds will benefit the survivors by allowing them to incubate quickly. If the rewetting process isn't drawing unduly on water supplies, the Salmon Managers would like that to continue for another week, Wagner said.

John Roache, BOR, reported that maintaining the current chum operation does not appear to be using much if any storage at Grand Coulee. Wagner noted that any further decisions to be made regarding chum will be based on actual data for the Ives Island redds at elevation 11.8 feet and lower. (This information was not available for redds at higher elevations.)

In light of today's discussion, the COE will continue the current operation, maintaining an 11.8 foot tailwater elevation at Bonneville with daily rewetings of exposed redds at 13.5 feet between 2000-2400 hours, Baus said. TMT will revisit the chum operation in a conference call next week.

### **3. PSMP Update**

Richard Turner and Sandy Shelin of the COE Walla Walla office reported on the effort to control sediment buildup in the lower Snake River basin. They walked TMT through three attachments to this item on today's agenda. The purpose of today's presentation was to provide information and answer questions, not discuss or comment on the NEPA process (see 3c, Comments).

3a. PSMP and EIS – Turner outlined the problem of sediment accumulation in the Lower Snake basin and described potential actions identified in the PSMP that will serve as a framework for future decisions. Sediment accumulation has been impacting navigation, recreation, fish transport and the performance of levees at the port of Lewiston since the lower Snake River dams were constructed. For environmental investigation of these problems, experts from the University of Idaho, WSU, USFWS and USGS worked with the COE to identify sources of sediment in the 32,000-square-mile basin. The study revealed that sediment transport in the Snake basin has increased since the 1970s and 80% of the sediment originates in the Snake River with the remaining 20% originating in the Clearwater. There is no practical or feasible strategy to reduce sediment loads from dominant sources.

Data from these studies were used to compile a report on how sediment can be managed. One factor that increases sediment transport is the effect of forest fires, which claimed around 5800 square miles from 1970 to 2000 and almost 1200 square miles in 2012 alone. The environmental study also identified four categories of tools for managing sediment and 7 potential alternatives to consider. Of these, only three alternatives were deemed viable.

Alternative #7, Use a comprehensive system of sediment management measures, was identified as the preferred alternative because it provides the most flexibility to manage sediment issues. This alternative will provide a framework for future decisions and will become the actual PSMP which is the Appendix A of the EIS.

3b. Immediate Need Areas – The PSMP contains triggers that indicate an immediate need to take action. Shelin gave a presentation on the trigger for navigation: there is less than 14 feet of channel depth at MOP. This trigger has been met in several locations in the Snake reservoirs, so the Corps is proposing to take action as soon as possible.

Dredging is the only available tool to restore the required channel depth to a navigable 14 feet year-round. The first opportunity to dredge would be in the winter of 2013/2014. Four areas have been proposed for dredging: the Federal channel at the Snake/Clearwater Rivers confluence, the ports of Clarkston and Lewiston and, the downstream approach to the Ice Harbor lock. The port of Clarkston will reimburse the COE for the federal contractor to dredge its areas. Based on hydrographic surveys, the COE plans to remove a total of 491,000 cubic yards of material from the Snake and Clearwater river channels.

Charles Morrill, Washington, asked whether the material identified for removal can be dredged in one in-water work period; Turner answered yes. Wagner asked whether any further environmental process would be required before proceeding with Alternative #7. The EIS contains two actions which are the establishment of the programmatic plan (PSMP) and the immediate need action (first dredging action) to re-establish navigation channel. In the future as sediment issues develop (or triggers in the PSMP are met) the COE will tier-off from the EIS and issue an environmental compliance document that covers all aspects of NEPA evaluation in relation to sediment management on the specific location in the lower Snake, Shelin replied.

3c. Comments – Any comments on the PSMP EIS process should be submitted to the COE via email as directed in attachment 3c to today’s agenda. Next steps in the NEPA process are:

- March 26 – PSMP comment deadline (email to: [psmp@usace.army.mil](mailto:psmp@usace.army.mil))
- Summer 2013 – COE issues final EIS/PSMP
- Fall 2013 – COE signs ROD
- Winter 2013/2014 – First available in-water work window for immediate-need areas to be dredged
- Finally, development of long-term solutions to sediment buildup

**4. Next TMT Meeting**

There will be a TMT conference call March 6 to revisit the chum operation. The next regular TMT meeting will be March 13.

<b>Name</b>	<b>Affiliation</b>
Tony Norris	BPA
Sheri Sears	Colville
John Roache	BOR
Tom Lorz	CRITFC/Umatilla
Russ Kiefer	Idaho
Paul Wagner	NOAA
Doug Baus	COE
Don Tinker	SCL
Steve Hall	COE Walla Walla
Richard Turner	COE Walla Walla
Sandy Shelin	COE Walla Walla
Laura Hamilton	COE
Joel Fenolio	COE Seattle
Lisa Wright	COE
Russ George	WMC
Bruce McKay	hydropower consultant
Dave Benner	FPC
Margaret Filardo	FPC

Richelle Beck  
Charles Morrill  
Greg XX  
Jim Litchfield  
Scott Bettin  
Tim XX  
Dan Feil  
Kim Johnson

Grant PUD  
Washington  
Thompson Reuters  
Montana  
BPA  
Energy GPS  
COE  
COE

# Programmatic Sediment Management Plan (PSMP) and Environmental Impact Statement (EIS)

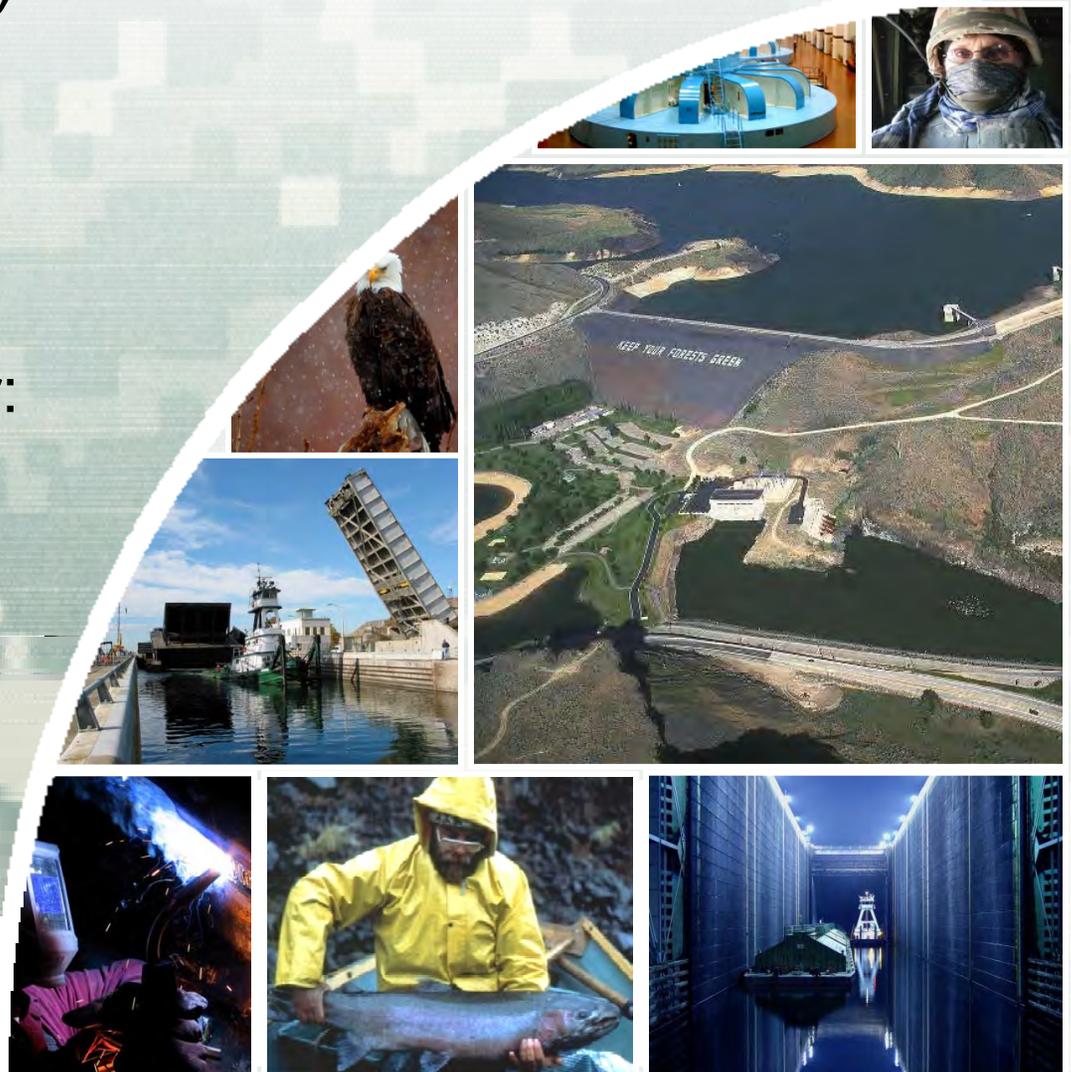
Project Manager:  
Richard Turner

Environmental Coordinator:  
Sandy Shelin

February 27, 2013



US Army Corps of Engineers  
**BUILDING STRONG**



# Presentation Outline

- Problem are we trying to solve
- Studies and analyses
- EIS Alternative development
- Proposed plan



# EIS Purpose

- The purpose of our proposed action is to:
  - (1) establish a programmatic plan for addressing problem sediment accumulation in the lower Snake River (long-term plan)
  - (2) address an immediate need action (consistent with the Plan) to re-establish the Congressionally-authorized dimensions of the navigation channel .



# EIS Need

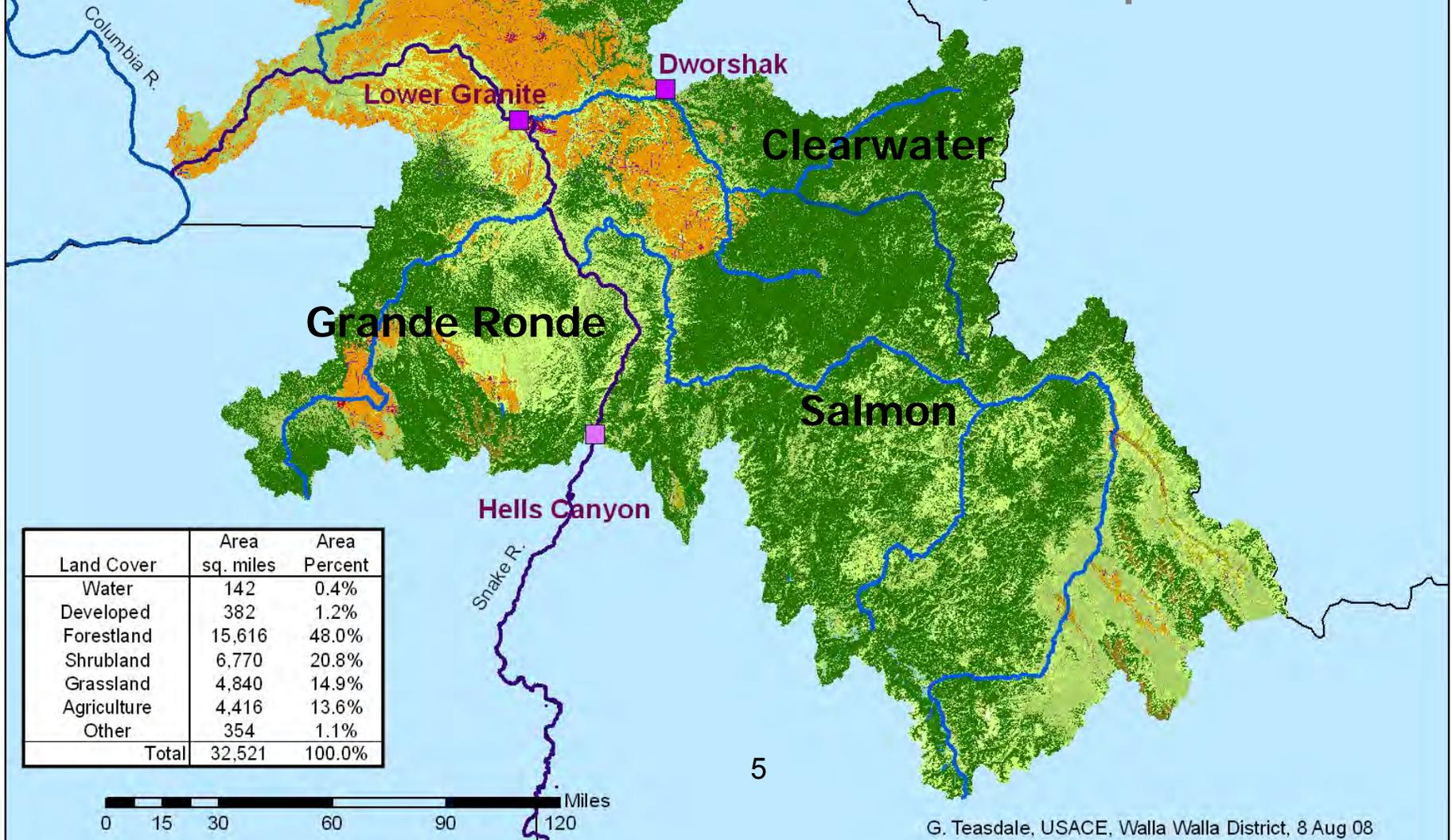
- The need for the PSMP is to manage, reduce and prevent, if possible, sediment accumulation in areas of the lower Snake River reservoirs that interferes with federally authorized purposes. Sediment accumulation interferes with the following purposes:
  - *Commercial navigation*
  - *Recreation*
  - *Fish and wildlife conservation*
  - *Passing high river flows at Lewiston*



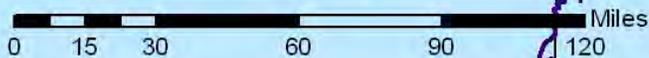


# PSMP Lower Snake River Basin Sediment Delivery Watershed

32,500 sq. mi.



Land Cover	Area sq. miles	Area Percent
Water	142	0.4%
Developed	382	1.2%
Forestland	15,616	48.0%
Shrubland	6,770	20.8%
Grassland	4,840	14.9%
Agriculture	4,416	13.6%
Other	354	1.1%
<b>Total</b>	<b>32,521</b>	<b>100.0%</b>



# Watershed Study Efforts

## Technical Experts

- US Geological Survey – Measured sediment carried by rivers
- Water Research Center of Washington State University and University of Idaho – Evaluated agricultural sediment
- US Forest Service – Evaluated forested land sediment
- Biological Studies – fish habitat use, water quality, sediment quality
- USACE-Research Center- Sand wave transport measurements



# Study Results

- More sediment is being transported by the rivers now than in the 1970's.
- 80% of the sediment comes from the Snake River drainage and 20% comes from the Clearwater River
- Salmon River delivers the most sediment compared to all basins
- Dominant sediment sources in the watershed are landslides and lands recently burned by forest fires.
- No practical or feasible strategy to reduce sediment loads from dominant sources
- Agricultural land erosion is minor input in reservoirs

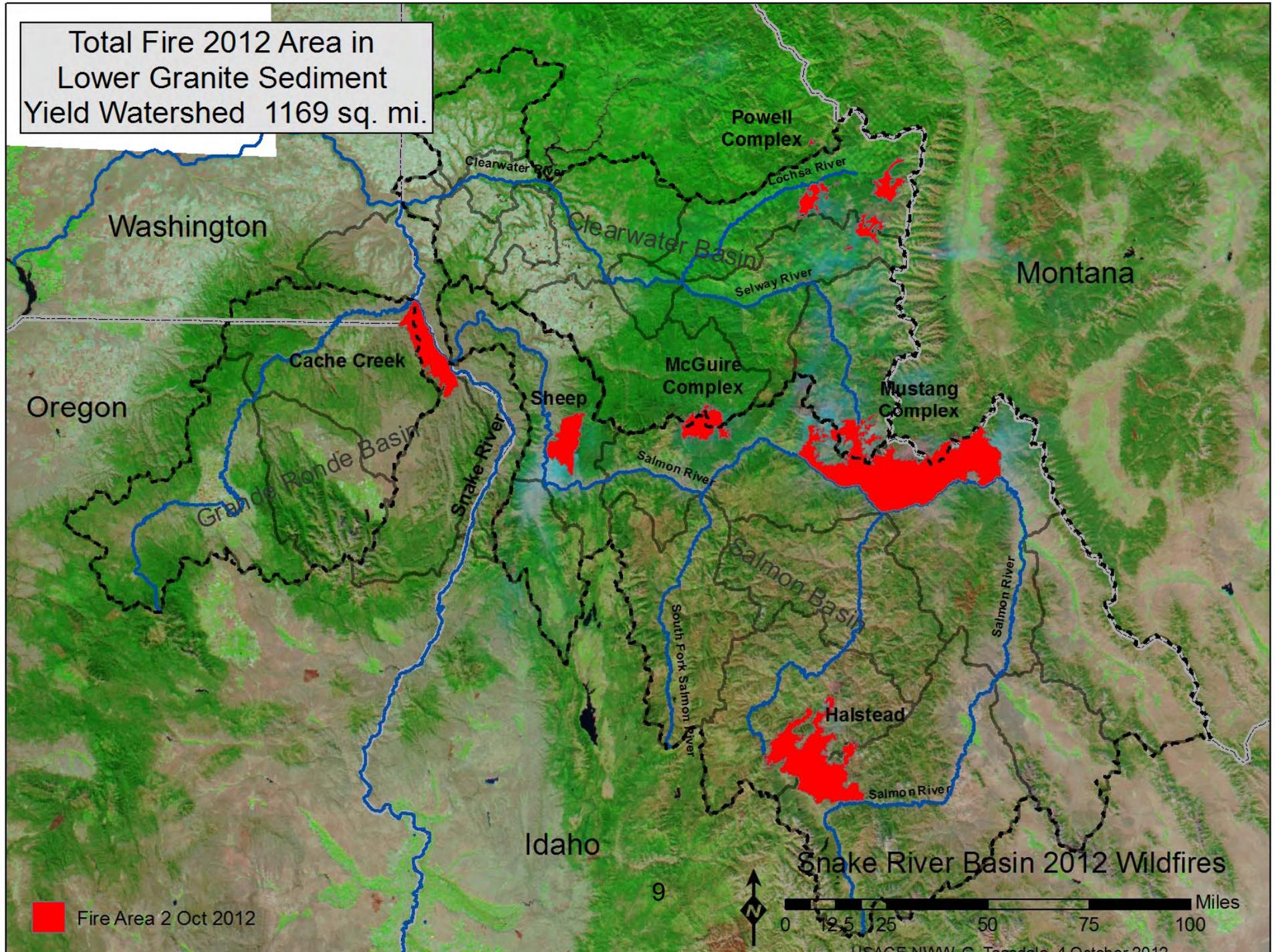


# Hydraulics and Hydrology Report

Elements of the PSMP Hydraulics and Hydrology Analysis		
Part 1	1	Introduction and major findings
	2	Multivariate discharge frequency analysis
	3	Stage variability at the confluence
	4	Fixed-bed hydraulic modeling of flood stage
	5	Flood risk analysis of the existing channel condition
Part 2	6	Potential inundation area of the Lewiston levee system
	7	Sediment accumulation in Lower Granite Reservoir
	8	Characterization of the bed material of Lower Granite Reservoir
	9	Analysis of sediment load at Lower Granite Reservoir
Part 3	10	Sediment transport analysis of Lower Granite Reservoir
	11	Mobile-bed flood risk analysis of the future channel condition
	12	Alternatives for sediment management in Lower Granite Reservoir
	13	Flood risk due to wind waves at the confluence
Part 3	14	Evolution of sand bedforms
	15	Sediment deposition in navigation channels
	16	Hydraulic modeling of environmental flows
	17	Effect of climate change on watershed sediment yield



Total Fire 2012 Area in  
Lower Granite Sediment  
Yield Watershed 1169 sq. mi.



Snake River Basin 2012 Wildfires

Fire Area 2 Oct 2012

# Categories of Measures

## “Tools in the Toolbox”

- Dredging and Dredged Material Management
- Structural Sediment Management – in-water structures, etc.
- System Management – manipulating pool levels, etc.
- Sediment Reduction - streambank erosion control, etc.



# Alternatives

- Alternative 1 – No Action (Continue Current Practices)
- Alternative 2 – Increased Implementation Sediment Reduction Measures (only)
- Alternative 3 – System Management (only)
- Alternative 4 - Structural Sediment Management Measures (only)
- Alternative 5 – Dredging Based Sediment Management
- Alternative 6 – System Management and Non-Dredging Sediment Management (combination of alt 2, 3, 4)
- Alternative 7 – Comprehensive “entire toolbox” - Full System and Sediment Management Measures



# Viabile Alternatives

- Alternative 1 – No Action (Continue Current Practices)
- Alternative 5 – Dredging Based Sediment Management
- Alternative 7 – Comprehensive “entire toolbox” - Full System and Sediment Management Measures



# Preferred Alternative

- Alternative 7 – Comprehensive “entire toolbox” - Full System and Sediment Management Measures
- 15 measures (tools)
- Proposed long-term plan to manage sediment on the Lower Snake River to meet authorized purposes.
- Implementation = Programmatic Sediment Management Plan (PSMP) Appendix A



# PSMP Appendix A – “The Plan”

- Determining the Need for Action – monitoring
- Problem Identification
  - Sediment Accumulation Affecting Authorized Purposes
- Triggers for Action
  - Emergency, Immediate Need, and Future (long-term) Need
- Formulation, Evaluation, and Comparison of Solutions (Planning Process – ID Alternatives for Each Problem)
- Final Design, Environmental Compliance, Plans and Specifications, and Contract Documents
- Implementation



# Immediate Need

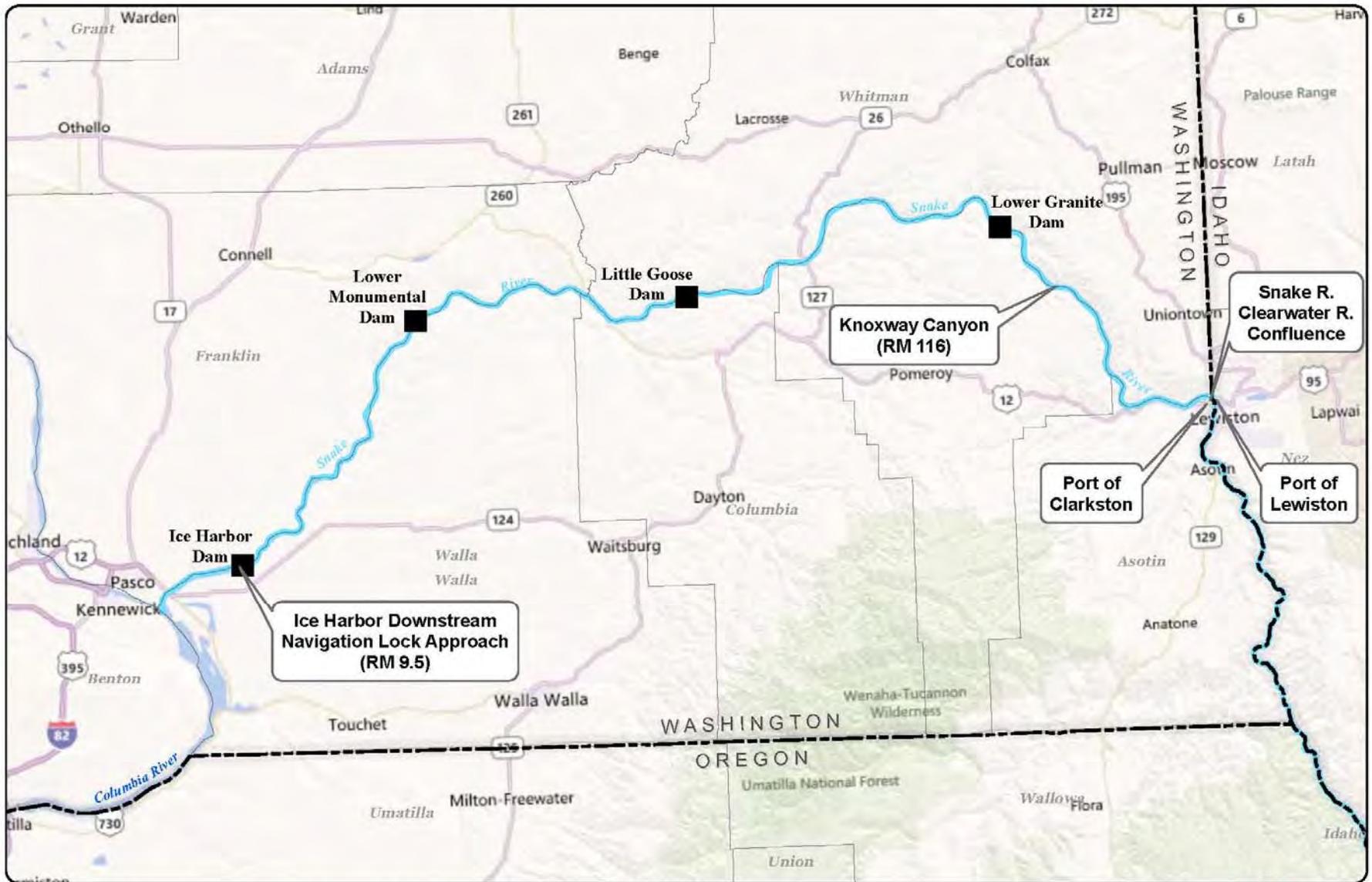
- Navigation has hit a trigger for “immediate need action”
- Federal navigation channel is less than 14 feet deep at minimum operating pool and impairing navigation
- Dredging is the only measure available to restore channel depth in the short-term
- First opportunity to implement may be winter 2013-14



15



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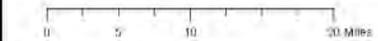


## Lower Snake River Navigation Maintenance



### Legend

- Dam Locations
- Snake River



MAP ID: PSMR\_DWA8E\_GresgMap\_inlay\_inscope.mxd  
 DATE: 17 September 2012  
 DISC: AMER

This product was produced from geospatial information by the U.S. Army Corps of Engineers. Geospatial data and products may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or other data, incomplete while being created or revised, etc. Using this product for purposes other than those for which it was intended may also be inaccurate or misleading results. The U.S. Army Corps of Engineers assumes no liability for completeness or accuracy, and reserves the right to correct, update, or modify geospatial data and/or products without notification.

# Federal Navigation Channel Dredging Area





# Port of Clarkston Dredging Areas



# Port of Lewiston Dredging Area



# Ice Harbor Lock Approach Dredging Area



# Quantities

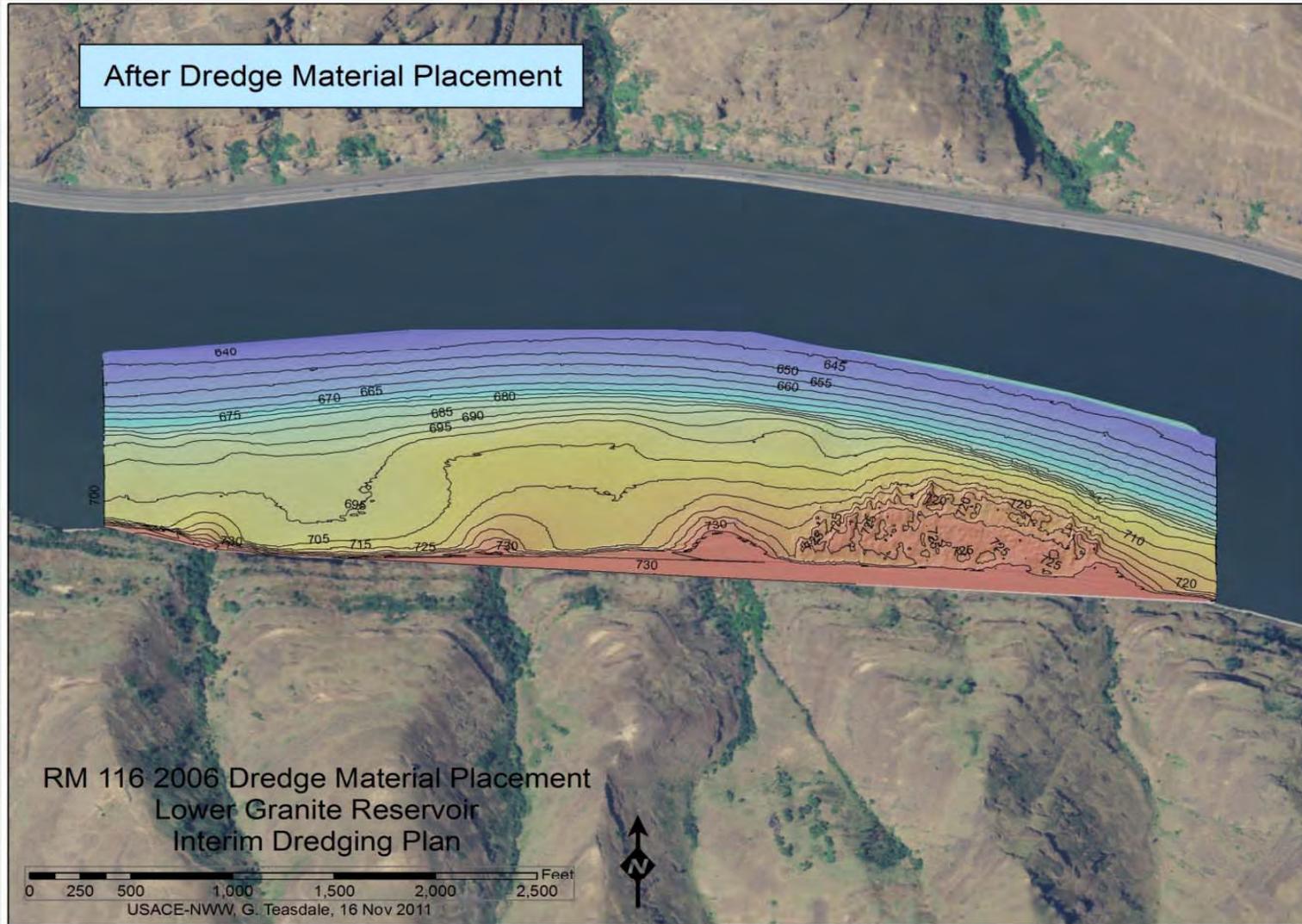


- Federal channel – 406,595 cubic yards (cy)
- Port of Clarkston – 10,220 cy
- Port of Lewiston – 3,000 cy
- Ice Harbor navigation lock approach – 1,950 cy

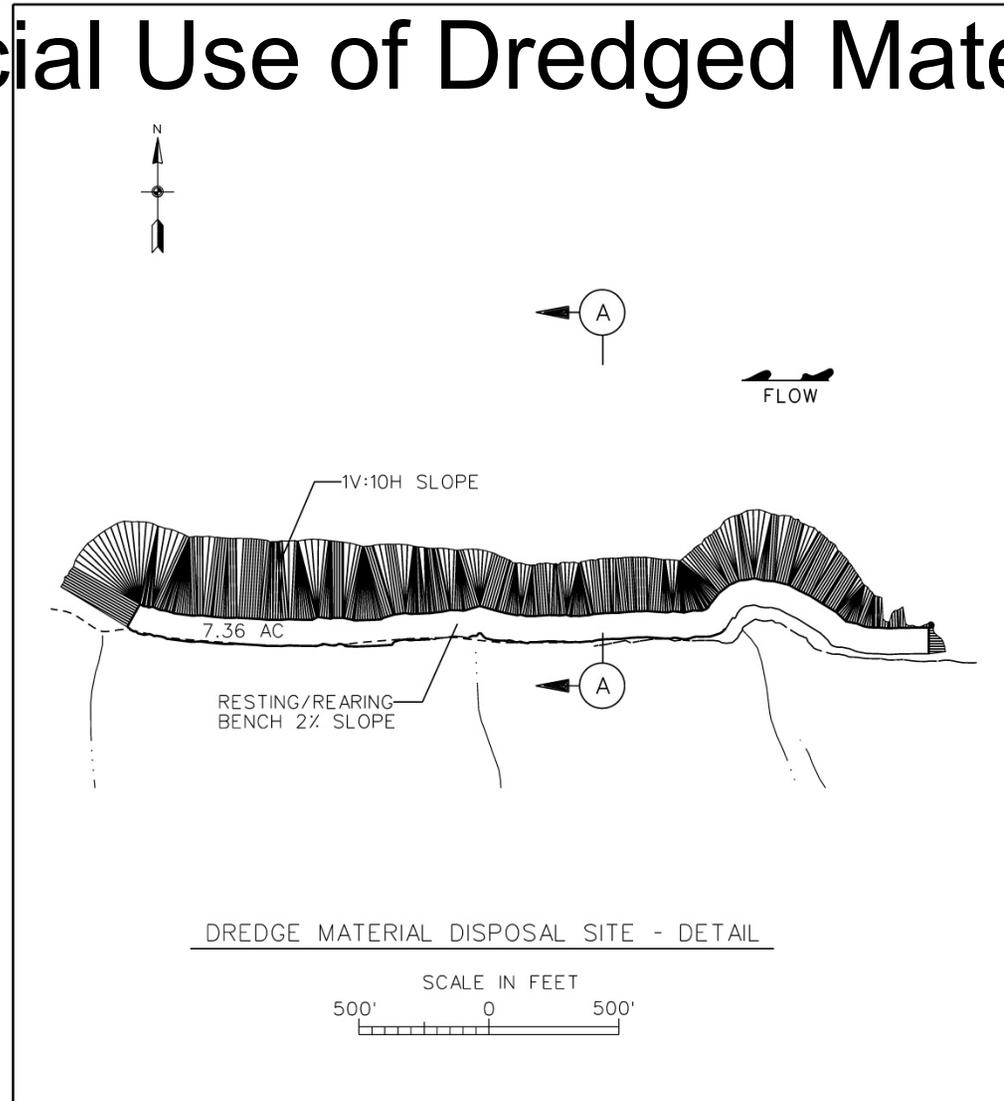


- Total – 421,765 cy

# Knoxway Canyon (River Mile 116) Disposal Site



# Beneficial Use of Dredged Material



U . S . ARMY ENGINEER DISTRICT  
WALLA WALLA, WASHINGTON

DESIGNED BY

MEYER

DRAWN BY (CADD DRAWN)

DREDGED MATERIAL DISPOSAL SITE  
AT RIVER M24 116 - DETAIL

FILENAME:  
C:\Users\G4E\DDP\Documents\Data Files\N\Ra

DATE  
9/11/2012

FIGURE XX



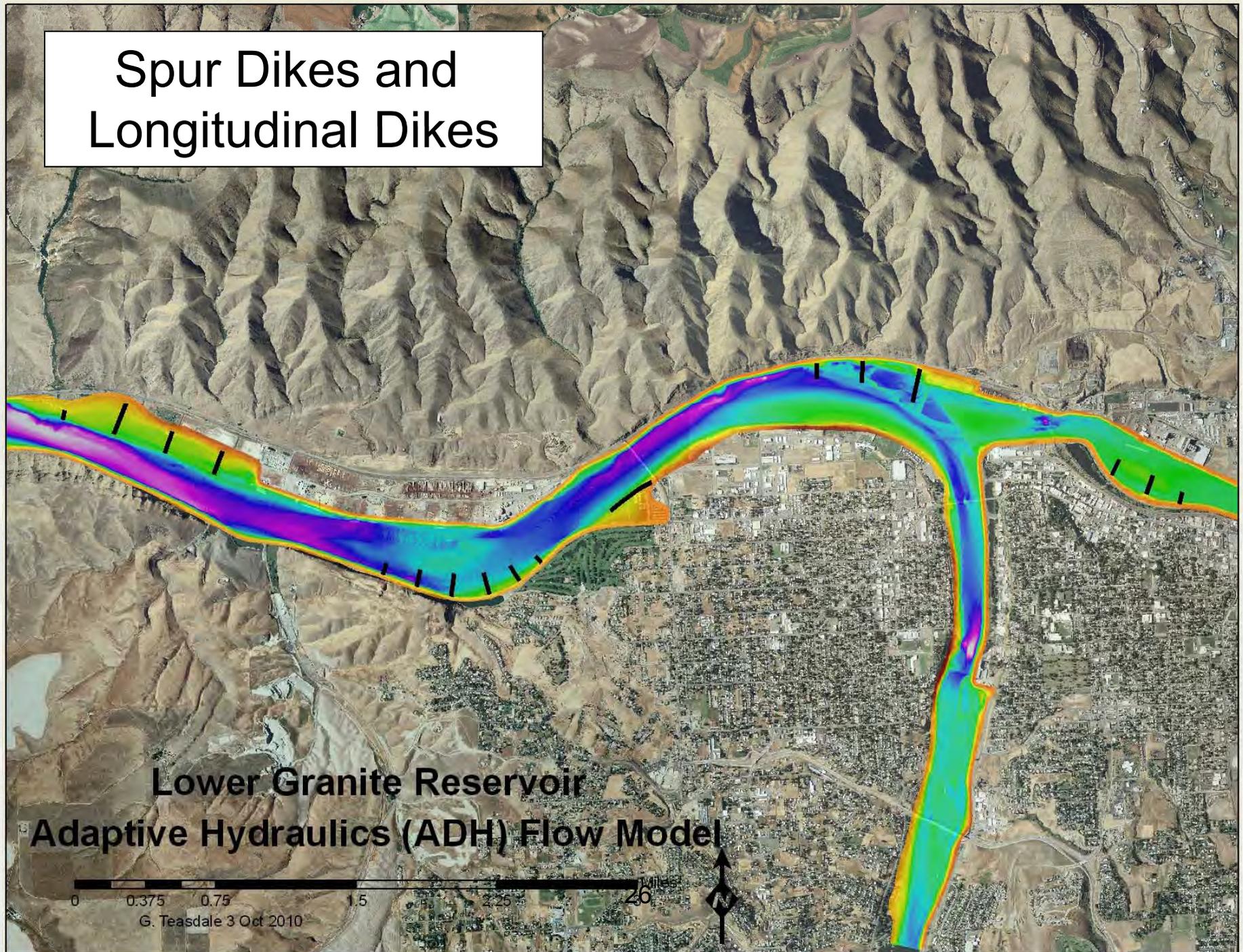
**DING STRONG®**

# Next Steps

- Public Comment Period Ends for the Draft EIS and PSMP March 26, 2013
- Corps Responds to Public Comments
- Corps Release Final EIS/PSMP for Public Review Summer 2013
- Corps Signs Record of Decision Fall 2013
- Implement Immediate Need Action (Dredging) First Available In-water Work Window
- Working on long term solutions



# Spur Dikes and Longitudinal Dikes



**Lower Granite Reservoir  
Adaptive Hydraulics (ADH) Flow Model**

0 0.375 0.75 1.5 2.25 2.6 Miles

G. Teasdale 3 Oct 2010

# Questions?



# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT CONFERENCE CALL

March 6, 2013 9:00am - 12:00pm

### CONFERENCE CALL INFORMATION

Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 5396

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnnw.net](mailto:rgumpert@cnnw.net) or call her at (503) 248-4703.*

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## AGENDA

1. Welcome and Introductions
2. Chum Operation - Doug Baus, COE-NWD and Paul Wagner, NOAA Fisheries
3. Final Operations for BON Lamprey Flume - Doug Baus, COE-NWD
  - a. [Lower Entrance](#)
4. Other
  - a. Set agenda and date for next meeting - **March 13, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Doug Baus](#) at (503) 808-3995*



# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

March 6, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Chum Operations Update**

A conference call was convened today to look at current conditions and determine an operation for chum moving forward. Paul Wagner, NOAA, said the salmon managers had discussed and agreed to continue the operation for another week – at an 11.8 foot minimum tailwater with 1-hour increments per day up to 13.5 feet for re-wetting. Paul said Battelle had provided temperature accrual data at various red locations; of those they had data on, 39 of 40 who had spawned prior to 11/14 had accrued enough temperatures to reach emergence. Of those remaining between 11/14-11/26, on average they need about 76 more TUs to get to emergence (so are on their way but not there yet) – which was reason to continue with the rewetting. Paul added that the salmon managers have stayed aware of upper river projects and storage during this operation.

Doug Baus, Corps, reported that the operation would continue at a minimum 11.8 foot tailwater at Bonneville – with daily one-hour increments of bringing the tailwater back up to 13.5 feet to re-wet any redds that had been spawned at that higher elevation. The Corps will retain re-wet timing within a 24-hour period, with some flexibility around actual time for re-wetting. John added that there has been minimal to no use of Grand Coulee storage for this operation, so supported continuing for the next week. He said additional water supply forecast and target objectives will be available next week as additional data to inform decisions moving forward. In response to a question, John said the Hungry Horse water supply outlook is currently 103% of average.

**Action/Planned Operation:** The action agencies agreed to continue with the current operation, maintaining a minimum 11.8 foot tailwater at Bonneville with a 1-hour re-wetting period occurring within a 24-hour period each day.

### **Final Operations for Bonneville Lamprey Flume**

Doug Baus reported that the installation of the lamprey flume had been completed on Monday, ahead of schedule. He acknowledged the coordination around this successful effort and provided a photo of the final piece of the flume that was installed. Now, the action agencies are transitioning back to 'normal' operations as defined in the Fish Passage Plan. They coordinated with NOAA Fisheries to open the B2 CC on 3/1 and keep it open until the DSM 2 is returned to service and fish screens are installed on operating units at PH2 (expected around 3/9). At that time, they will close the CC and begin counting

kelt, using 2 kelts per day for 2 consecutive days as a trigger for re-opening the CC. In the past, exceeding 105% TDG as an instantaneous read at Warrendale would also trigger closing the CC. Recognizing that exceedance is likely to occur this year based on current conditions AND that TMT in the past has re-negotiated that operation in real-time, the Action Agencies asked for a recommendation from TMT today to get ahead of that operation.

Paul Wagner, NOAA, recommended that the CC remain open up to 110% TDG at Warrendale, anticipating that the TDG will actually fall in the 105-106% range. Given there is some depth compensation over chum redds, this approach was acceptable. TMT members weighed in on this proposal;

- NOAA – recommended the approach
- Umatilla Tribes – support
- Colville Tribe – support
- WA – support
- OR – support
- ID – support
- MT – neutral on this issue
- BPA –deferred to Corps for TDG management
- Reclamation – deferred to Corps

**Action/Planned Operation:** Given the regional consensus, the Corps planned to keep the CC open until DSM and fish screens are in place at which time they will close the CC and use the kelt count trigger described above for re-opening the CC. The CC will remain open even if there is a 105% TDG exceedance read at Warrendale based on the Salmon Manager’s recommendation, and the Corps will monitor this closely and revisit with TMT if it starts to approach 110%. The Corps will operate the CC not to exceed 110% TDG.

**Next Meeting – 3/13 Face to Face**

Agenda items include:

- Water Supply Forecasts
- Chum Operation
- Water Quality Update – include TDG at Warrendale
- Other?

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

March 6, 2013

Notes: Pat Vivian

#### **1. Introduction**

Today's TMT conference call was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of Washington, NOAA, Colville Tribe, COE, Montana, BOR, BPA, CRITFC/Umatilla Tribe, Idaho, Oregon and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### **2. Chum Operations Update**

Since last week's TMT meeting, the COE has continued to maintain the Bonneville minimum tailwater elevation of 11.8 feet for chum, with a rewetting every day to 13.5 feet elevation for 1 hour to rewet redds. Paul Wagner, NOAA, reported that emergence has begun for 39 of the 40 redds spawned before November 14. For the next two weeks, fish spawned in the 11.5-12.5 foot elevation range. After November 26, they spawned up to 13.5 feet elevation. Both of these groups of redds need additional exposure to more TU's to complete emergence. The redds spawned after November 26 are the ones being rewetted daily at 13.5 feet.

After conferring at FPAC yesterday, the Salmon Managers decided they would prefer to continue the current chum operation for another week while keeping an eye on the water supply and potential risks to the upper rule curve for Grand Coulee, Wagner said. Baus asked TMT for approval to do the rewetting at any point during a 24-hour period instead of at night, per last week's TMT coordination. Wagner said that would be acceptable from NOAA's perspective. Scott Bettin explained that BPA would prefer to do the rewetting during a four-hour window in the afternoon now that turbines are available.

John Roache, BOR, reported that the current chum operation is having minimal if any effect on storage at Grand Coulee. Lake Roosevelt is now at elevation 1276 feet, where it has been for the past 2 weeks. Charles Morrill, Washington, asked about the current weather outlook for Hungry Horse. The water supply forecast released this morning shows Hungry Horse at 103% of average, with around average snowpack throughout the Flat Head Valley, Roache replied.

In light of today's discussion, the COE will continue the current chum operation at Bonneville for the next week, with a rewetting to 13.5 feet every 24 hours on a flexible schedule. TMT will revisit the chum operation at next week's TMT meeting.

### **3. Final Operations for Bonneville Lamprey Flume**

Installation of the Lamprey Flume System (LFS) at Bonneville Dam was completed on the night of March 4, sooner than anticipated, Baus reported. He thanked everybody for their patience with coordination of several concurrent operations at Bonneville Dam in recent months.

Now that the LFS installation is complete, Bonneville Dam is returning to normal operations as described in the Fish Passage Plan and doing this will require some special operations this year to accomplish this task. The AA's coordinated with NOAA and are implementing the following special B2CC operation for this year due to installation of the LFS as well as other concurrent special operations that have delayed the operation of DSM2 and the installation of PH2 screens beyond the start of Fish Passage Season on March 1:

- a. The B2CC was opened on March 1 and the COE will operate the B2CC until the DSM2 is returned to service with screens installed in operating PH2 units (currently anticipated on approximately March 9).
- b. Once the DSM2 is in service with screens installed in operating units, the COE will close the B2CC and begin counting kelt at the Juvenile Monitoring Facility.
- c. The kelt trigger coordinated for this year is a count of 2 kelts per day for 2 consecutive days. Once this trigger is reached, the B2CC will re-open.

During the month of March under normal conditions the COE operates Bonneville Dam in accordance with water quality requirements not to exceed 105% at WRNO for the chum operation. This year will be different due to special operations associated with the installation of the LFS. It is reasonable to expect the following:

- a. We anticipate being near or above 105% TDG at WRNO when we re-open the B2CC after the kelt trigger has been reached.
- b. Current TDG conditions at WRNO (105.5%) suggest after the kelt trigger has been reached and the B2CC is re-opened it would only be in operation for a short period of time and then closed. The COE would like to hear TMT's recommendation on the operation of the B2CC should TDG be in excess of 105% once the kelt trigger is reached and B2CC is re-opened.
- c. In previous year the COE has closed the B2CC once TDG has exceeded 105 % at WRNO. Then after coordinating with the TMT and receiving the recommendation to resume operation of the B2CC in excess of the state water quality criteria the COE will coordinate with the state and resume operation of the B2CC with modified requirements. Those modifications

have involved operating the B2CC not to exceed 110% TDG at WRNO. Should the COE then continue to exceed 110% TDG in coordination with the TMT the COE will implement a series of operations designed to minimize TDG (eg closure of the PH1 ice and trash sluiceway, closure of attraction flows in bays 1 and 18). Finally, if % TDG continues to exceed 110% at WRNO after these additional steps have been taken then the COE closes the B2CC.

**NOAA's** preference would be to keep the B2CC open, Wagner replied. Current TDG readings are in the 105-106% range which NOAA finds acceptable in light of depth compensation over the chum redds. NOAA therefore recommended keeping the Bonneville corner collector open unless TDG saturation levels reach 110% at Warrendale gage, which seems unlikely.

**Oregon, Washington, Idaho, CRITFC/Umatilla Tribe** and the **Colville Tribe** all concurred with NOAA's recommendation. **BPA** and **BOR** deferred to the COE regarding TDG management, while **Montana** took no position on the issue.

The **COE** will continue to operate the B2CC until the DSM2 is returned to service and operating units at PH2 are screened, Baus said. When that occurs, probably sometime around March 9, the COE will close the B2CC. The B2CC will remain closed until the kelt trigger (2 kelts for 2 consecutive days) is reached. The B2CC will re-open and the COE will operate the B2CC even if TDG levels at WRNO exceed 105% but not to exceed 110% TDG. Should TDG levels approach 110% then the TMT will discuss at subsequent meetings any other operational adjustments that could be made (closure of PH1 ITS and/or closure of spillbays 1 and 18) to minimize TDG at WRNO.

The COE will provide an update on TDG readings at WRNO during the water quality portion of next week's TMT meeting.

#### **4. Next TMT Meeting**

TMT will meet next in person on March 13.

<b>Name</b>	<b>Affiliation</b>
Charles Morrill	Washington
Paul Wagner	NOAA
Sheri Sears	Colville
Doug Baus	COE
Jim Litchfield	Montana
John Roache	BOR
Bill Proctor	COE
Scott Bettin	BPA
Tony Norris	BPA
Tom Lorz	CRITFC/Umatilla
Rick Kruger	Oregon

Russ Kiefer	Idaho
Don Tinker	SCL
Barry Espenson	CBB
Sherry XX	Puget Sound Energy
Russ George	WMC
Bruce McKay	consultant
Margaret Filardo	FPC
Richelle Beck	Grant PUD
Ruth Burris	PGE
XX	EWEB

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

Wednesday March 13, 2013 9:00am - 12:00pm

1125 N.W. Couch Street, Suite 500, Columbia Room  
Portland, Oregon 97209-4142  
Map Quest [\[Directions\]](#)

**TMT MEETING**  
Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 0531

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## AGENDA

1. Welcome and Introductions
2. Review February 13, 20, 27, and March 6 Meeting Minutes
3. Update on Water Supply Forecast - Doug Baus, COE-NWD
  - a. [NWRFC WSF Current Conditions TDA](#)
  - b. [NRCS SNOTEL SWE % of Normal](#)
4. Chum Update - Paul Wagner, NOAA Fisheries and Doug Baus, COE-NWD
5. Spill Priority List - Doug Baus, COE-NWD
  - a. [List](#)

6. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
7. Other
  - a. Set agenda and date for next meeting - **March 20, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Doug Baus](#) at (503) 808-3995*

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

March 13, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### Review Meeting Minutes

The February 13, 20, 17 and March 6 meeting Official Minutes and Facilitator's Notes were reviewed and approved with no edits.

### Update on Water Supply Forecast

Doug Baus, Corps, reported on the March final water supply forecasts:

- The Dalles: 80 MAF (92% of average)
- Lower Granite April – July: 17 MAF (87% of average)
- Dworshak: April – July 2,128 KAF (79% of average)
- Libby April – August: 6,315 KAF (108% of average)

John Roache, Reclamation, also reported on:

- Hungry Horse March – July 2030 KAF (103% of average). The Hungry Horse May – September 1,743 KAF forecast is also 103%.

Doug shared the Snotel map, showing average to < average snowpack across the basin.

### Chum Operations Update

Paul Wagner, NOAA, reported that chum emergence is close in terms of temperature units, but evidence suggests that some chum may linger in the area and so the salmon managers recommended continuing the current operation for another week. They acknowledged some risk to meeting the Grand Coulee 4/10 elevation objective and will want to watch this closely. John Roache responded that the current elevation at Grand Coulee is 1276 feet, and based on the latest forecast 1279.9 feet is the April 10 elevation objective. So far, there has been no filling or drafting of Grand Coulee. There is uncertainty, but the latest STP model run shows the system would be able to meet both the chum operation and refill close to the 4/10 objective.

Charles Morrill, Washington, thanked the action agencies for their successful commitment to creating balance in the system to meet multiple needs.

**Action/Planned Operation:** Doug said the Corps will continue to implement the current operation, a minimum 11.8 foot tailwater at Bonneville with 1 hour per day increments of rewetting up to 13.5 feet. TMT will revisit this issue during a March 20 conference call.

### **Spill Priority List**

Doug posted a link on the agenda showing a proposed change to the spill priority list which the action agencies would like to implement starting April 1, through May 15. In addition the action agencies would like to extend the current wintertime spill priority list through the end of March.

Russ Kiefer, Idaho, said the salmon managers will track fish movement at Lower Granite and may request a switch to the new list sooner based on that information. The Corps will be notified and this item will be discussed at a future TMT meeting as needed.

**Action/Planned Operation:** Doug said the Corps will extend the current wintertime spill priority list (eg. Level 1: BON, TDA, JDA, MCN, IHR, LMN, LGS, LWG, DWR, CHJ, GCL) through the end of March and implement the spill priority list discussed today (eg: Level 1: LWG, LGS, LMN, IHR, MCN, JDA, TDA, BON, CHJ, GCL, DWR) from April 1 – May 15.

### **Operations Review**

**Reservoirs** – John Roache, Reclamation, reported on projects: Hungry Horse was at elevation 3535.4 feet, with 1.8 kcfs outflows. He reported average snow pack in the area and a March flood control target of 3537.2 feet. Grand Coulee was at elevation 1276 feet and operating to meet chum.

Lisa Wright, Corps, reported on projects: Libby was at elevation 2393.5 feet with 3.1 kcfs inflows and 4.0 kcfs outflows. Albeni Falls was at elevation 2055.4 feet, with 15.7 kcfs inflows and 18.0 kcfs outflows. Dworshak was at elevation 1549.1 feet, with 4.1 kcfs inflows and 1.6 kcfs outflows.

Lower Granite day average inflows were 27.3 kcfs; at McNary, 100.1 kcfs; and at Bonneville, 135.9 kcfs.

**Fish** – Paul Wagner, NOAA, reported that juvenile sampling upriver will begin at the end of March. Some adult Spring Chinook have been seen past Bonneville. Charles Morrill, Washington, will provide a TAC report on the adult passage forecast at next week's TMT meeting.

**Water Quality** – Scott English, Corps, said the new CWMS 2.0 is now reporting system wide spill data back through 2004. The Corps welcomed feedback on the format for displaying the data. TMT members commented that it was user-friendly as is. He also reported that the 2012 annual water quality report is now posted electronically. Also, the fixed monitoring stations are being installed and coming on line. In the next two weeks, all stations will be on line.

With regards to Warrendale TDG – Scott showed there had been some exceedances of the 105% standard (today's read was 106.2%). Doug Baus added that if TDG exceeds 110% prior to April 1, the Corps will use stepwise approach to bring it back down:

1. Close ice and trash sluiceway at PH 1, and monitor for 24 hours. If it still exceeds go to step 2.
2. Close spill bays 1 & 18, and monitor for 24 hours. If it still exceeds go to step 3.
3. Close the B2 CC.

TMT suggested a format change to the TDG table, to more clearly show the exceedances (in a reader friendly color). Scott said his team would work on a revision and share it with TMT for feedback before making the change permanent.

**Next Meeting, 3/20 Conference Call (\*This meeting was cancelled on 3/19 as there was no change recommended to the chum operation, and the TAC report will be shared at the 3/27 meeting.)**

Agenda items include:

- Chum Operations Update
- TAC Adult Passage Forecast

**Columbia River Regional Forum**  
**TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES**

**March 13, 2013**  
Notes: Pat Vivian

***1. Introduction***

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of the COE, NOAA, Oregon, BOR, USFWS, Idaho, BPA, Washington, Montana, Salish-Kootenai Tribe and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

***2. Review of Meeting Minutes – February 13, 20, 27, and March 6, 2013***

There were no comments on either the official minutes or facilitator's notes for any of these meetings. The minutes and notes can be considered final unless future concerns are raised.

***3. Update on Water Supply Forecast***

Baus and John Roache, BOR, presented the March final water supply forecasts for individual basins:

- The Dalles (April-August) – 80 MAF, 92% of average
- Lower Granite (April-July) – 17 MAF, 87% of average
- Dworshak (April-July) – 2128 KAF, 79% of average
- Libby (April-August) – 6315 KAF, 108% of average
- Hungry Horse (March-July) – 2030 KAF, 103% of average; flood control period (May-September) – 1743 KAF, 103% of average

The SNOTEL sites (shown in attachment 3b) indicate most areas in the basin have average to below average snow/water equivalents, Baus said.

***4. Chum Update***

While all of the chum eggs below Bonneville should have hatched by now in terms of cumulative exposure to temperature units, not all of the fish will emerge from gravel as soon as they've hatched, Paul Wagner, NOAA, said. Therefore the Salmon Managers recommend continuing the current chum operation (11.8 ft minimum tailwater elevation) at Bonneville for another week, rewetting the redds once every 24 hours to elevation 13.5 feet for one hour, if this doesn't put the April 10 Grand Coulee elevation target at risk. Adopting this recommendation would protect the emergent chum population, especially those incubating at higher elevations in the Bonneville tailwater. The Salmon Managers acknowledge that achieving the April 10 elevation target at Grand Coulee is at some risk and would like feedback from the Action Agencies on the

number of feet by which the elevation target might be missed if this week's recommendation is implemented, Wagner said.

John Roache, BOR, reported that Grand Coulee is currently at elevation 1276 feet with a target elevation of 1279 feet for April 10. Last week's STP water supply forecast indicates it will be possible to implement today's chum recommendation and achieve the April 10 elevation target. While achieving April 10 is still uncertain, the chum operation is not currently causing Grand Coulee to draft out of storage, based on a review of the chum operation's effects on Lake Roosevelt over the past 1 ½-2 months. The expected discharge out of Grand Coulee over the next week or so to extend the chum operation for another week should be 70-80 kcfs, Roache and Tony Norris, BPA, estimated.

That would be an acceptable level of risk, Wagner said, acknowledging there's still some risk to April 10 involved. A phone participant asked for the end of April flood control elevation at Grand Coulee; it's 1265.1 feet at present, Roache replied. That could change with the April final water supply forecast.

Charles Morrill, Washington, thanked the Action Agencies for their cooperation and assistance in trying to meet both chum and April 10 objectives. Hearing today's feedback, the COE will implement the Salmon Managers' recommendation to continue the current chum operation at Bonneville, which calls for a minimum tailwater elevation of 11.8 feet and a one-hour rewetting to 13.5 feet every 24 hours. TMT will revisit the chum operation in a conference call on March 20.

## ***5. Spill Priority List***

Doug Baus, COE, proposed to extend the current spill priority list (eg Level 1: BON, TDA, JDA, MCN, IHR, LMN, LGS, LWG, DWR, CHJ, GCL) through March 31, and then implement the spill priority list attached to today's agenda (eg Level 1: LWG, LGS, LMN, IHR, MCN, JDA, TDA, BON, CHJ, GCL, DWR) from April 1-May 15.

Russ Kiefer said Idaho supports maintaining current spill priorities at this time but might request a switch to the proposed spill priority list sooner than April 1 if fish show up early at Lower Granite. That is unlikely given current weather conditions and forecasts, but it is possible. Baus said spring spill priorities have been implemented prior to April 1 in past years and asked the Salmon Managers to give the Action Agencies a heads-up as early as possible if they anticipate making a request for early implementation of spring spill priorities this year.

Baus reported the Action Agencies will extend the current spill priority list through March 31 and then implement the spill priority list attached to today's agenda from April 1 – May 15.

## 6. Operations Review

**a. Reservoirs.** Hungry Horse is at elevation 3535.4 feet, with 1.8 kcfs releases to meet Columbia Falls minimum flows. Grand Coulee is at elevation 1276 feet, operating to support Hanford reach protection flows and chum.

Libby is at elevation 2393.5 feet, with inflows of 3.1 kcfs and releases of 4 kcfs. Albeni Falls is at elevation 2055.4 feet, with inflows of 15.7 kcfs and releases of 18 kcfs. Dworshak is at elevation 1549.1 feet, with inflows of 4.1 kcfs and releases of 1.6 kcfs. Lower Granite daily average inflows are 27.3 kcfs. McNary daily average inflows are 100.1 kcfs. Bonneville daily average inflows are 135.9 kcfs.

**b. Fish.** Sampling at mainstem Columbia projects has not yet begun, Wagner said. Steelhead have been showing up in small numbers at Bonneville, and 30 spring chinook have already passed Bonneville. Sampling has begun for juvenile passage there. Sampling at Lower Granite begins March 29 when the fish screens are installed. Most of the projects have yet to install screens for monitoring. Morrill said he will provide a fish run forecast for 2013 during next week's TMT call.

Tony Norris, BPA, asked whether the lamprey flume at Bonneville is operational. Not yet, David Wills, USFWS, replied; the contractor is working on construction of the ladder. Norris asked whether lamprey counts will be added to fish counts posted online; Wills said he doubted it at this point.

**c. Water Quality.** Significant progress has been made in converting water quality data to the new CWMS 2.0 data management system, Scott English, COE, reported. As a result the TMT website now offers system-wide total daily spill measurements at all Columbia River dams going back to 2004. This information can be found by clicking the "systemwide total daily spill" tab under Water Quality Data. English also reported that the COE District offices are in the process of installing fixed monitoring stations in preparation for the 2013 spill season.

There have been exceedances of 105% TDG water quality requirement at the Warrendale (WRNO) gage below Bonneville. Doug Baus added that if TDG exceeds 110% TDG at WRNO prior to April 1, the Corps will use stepwise approach to bring it back down based on previous years operations:

1. Close ice and trash sluiceway at PH 1, and monitor for 24 hours. If it still exceeds go to step 2.
2. Close spill bays 1 & 18, and monitor for 24 hours. If it still exceeds, go to step 3.
3. Close the B2CC.

Jim Litchfield, Montana, suggested that the new CWMS-based graphs depicting TDG exceedances show percent saturation readings in a white font because black

doesn't show up well on the red background indicating an exceedance; Morrill seconded this suggestion. The COE will explore options for making the exceedance data more readable, English said.

**d. Power System.** There was nothing to report today.

## **6. Next TMT Meeting**

There will be a TMT conference call on March 20 to check in on the chum operation and hear the latest fish run forecasts for 2013. The next regular TMT meeting will be on March 27.

<b>Name</b>	<b>Affiliation</b>
Rick Kruger	Oregon
John Roache	BOR
Lisa Wright	COE
Paul Wagner	NOAA
David Wills	USFWS
Russ Kiefer	Idaho
Doug Baus	COE
Scott English	COE
Karl Kanbergs	COE
Tony Norris	BPA
Agnes Lut	BPA
Charles Morrill	Washington
Jim Litchfield	Montana
Scott Bettin	BPA
Dave Hogan	BPA
Kerry XX	BPA
Laura Hamilton	COE

### *Phone:*

Ph – Margaret Filardo	FPC
Brian Marotz	Montana
Heather Dohan	Puget
Shane Scott	PPC
Joel Fenolio	COE
Billy Barquin	Salish Kootenai
Don Tinker	SCL
Barry Espenson	CBB
Ruth Burris	PGE
Greg XX	Thompson Reuters
XX	Lewis County PUD
Richelle Beck	Grant PUD
Mike Shapley	Snohomish PUD

3/11/13

**DRAFT 2013 SPILL PRIORITY LIST (April 1-May 15)**

All spill flows are provided in kcfs or percent of total river flow.

LEVEL 1 SPILL (THIS LEVEL REPRESENTS SPILL TO THE STATE WATER QUALITY STANDARDS):	SPILL CAPS (CAN BE CHANGED)
1) LWG UP TO FISH PASSAGE SPILL CAP	41
2) LGS UP TO FISH PASSAGE SPILL CAP	40
3) LMN UP TO FISH PASSAGE SPILL CAP	28
4) IHR UP TO FISH PASSAGE SPILL CAP	100 NIGHT / 75 DAY
5) MCN UP TO FISH PASSAGE SPILL CAP	146
6) JDA UP TO FISH PASSAGE SPILL CAP	90
7)TDA UP TO FISH PASSAGE SPILL CAP	135
8) BON UP TO FISH PASSAGE SPILL CAP	100
9) CHJ UP TO 110% TDG SPILL CAP	20
10) GCL UP TO 110% TDG SPILL CAP	RO = 0; DRUMGATES = 5
11) DWR UP TO 110% TDG SPILL CAP	30%

LEVEL 2 (THIS LEVEL REPRESENTS SPILL WITHOUT CONSIDERATION OF THE DOWNSTREAM FOREBAY RESTRICTION): **:	SPILL CAPS (CAN BE CHANGED)
12) LWG UP TO 120% TDG SPILL CAP	45
13) LGS UP TO 120% TDG SPILL CAP	52
14) LMN UP TO 120% TDG SPILL CAP	44
15) IHR UP TO 120% TDG SPILL CAP	100 NIGHT / 75 DAY
16) MCN UP TO 120% TDG SPILL CAP	146
17) JDA UP TO 120% TDG SPILL CAP	146
18) TDA UP TO 120% TDG SPILL CAP	135
19) BON UP TO 120% TDG SPILL CAP	120
20) CHJ UP TO 120% SPILL CAP (SHAPED 116% AT WEL, UP TO THE 120% IN THE CHJ TAILRACE, DEPENDING ON EXPECTED DURATION)	60

\*\* Background assumption is that involuntary spill is for 6 hours or less.

LEVEL 3 SPILL IS AS FOLLOWS**:	SPILL CAPS (CAN BE CHANGED)
21) LWG UP TO 122% TDG SPILL CAP	52
22) LGS UP TO 122% TDG SPILL CAP	59
23) LMN UP TO 122% TDG SPILL CAP	60
24) IHR UP TO 122% TDG SPILL CAP	100 NIGHT / 85 DAY
25) MCN UP TO 122% TDG SPILL CAP	152
26) JDA UP TO 122% TDG SPILL CAP	177
27) TDA UP TO 122% TDG SPILL CAP	160
28) BON UP TO 122% TDG SPILL CAP	120
29) CHJ UP TO 120% TDG SPILL CAP	100
30) GCL <sup>1</sup> UP TO 115% TDG SPILL CAP	RO=5; DRUMGATES=15

<sup>1</sup> Transition to GCL drumgates when forebay elevation is between 1267-1270 feet.

LEVEL 4 SPILL IS AS FOLLOWS:	SPILL CAPS (CAN BE CHANGED)
31) LWG UP TO 125% TDG SPILL CAP	63
32) LGS UP TO 125% TDG SPILL CAP	70
33) LMN UP TO 125% TDG SPILL CAP	80
34) IHR UP TO 125% TDG SPILL CAP	110
35) MCN UP TO 125% TDG SPILL CAP	230
36) JDA UP TO 125% TDG SPILL CAP	190
37) TDA UP TO 125% TDG SPILL CAP	269
38) BON UP TO 125% TDG SPILL CAP	215
39) CHJ UP TO 122% TDG SPILL CAP	160
40) GCL UP TO 120% TDG SPILL CAP	RO=15; DRUMGATE=25

LEVEL 5 SPILL IS AS FOLLOWS:	SPILL CAPS (CAN BE CHANGED)
41) LWG UP TO 127% TDG SPILL CAP	85
42) LGS UP TO 127% TDG SPILL CAP	95
43) LMN UP TO 127% TDG SPILL CAP	120
44) IHR UP TO 127% TDG SPILL CAP	124
45) MCN UP TO 127% TDG SPILL CAP	280
46) JDA UP TO 127% TDG SPILL CAP	206
47) TDA UP TO 127% TDG SPILL CAP	294
48) BON UP TO 127% TDG SPILL CAP	234
49) CHJ UP TO 125% TDG SPILL CAP	190
50) GCL UP TO 122% TDG SPILL CAP	RO=20; DRUMGATE=60

LEVEL 6 SPILL IS AS FOLLOWS:	SPILL CAPS (CAN BE CHANGED)
51) LWG UP TO 130% TDG SPILL CAP	90
52) LGS UP TO 130% TDG SPILL CAP	125
53) LMN UP TO 130% TDG SPILL CAP	180
54) IHR UP TO 130% TDG SPILL CAP	145
55) MCN UP TO 130% TDG SPILL CAP	321
56) JDA UP TO 130% TDG SPILL CAP	250
57) TDA UP TO 130% TDG SPILL CAP	360
58) BON UP TO 130% TDG SPILL CAP	250
59) CHJ UP TO 127% TDG SPILL CAP	250
60) GCL UP TO 125% TDG SPILL CAP	RO=25; DRUMGATE=80

LEVEL 7 SPILL IS AS FOLLOWS:	SPILL CAPS (CAN BE CHANGED)
61) LWG UP TO 135% TDG SPILL CAP	200
60) LGS UP TO 135% TDG SPILL CAP	177
62) LMN UP TO 135% TDG SPILL CAP	250
63) IHR UP TO 135% TDG SPILL CAP	240
64) MCN UP TO 135% TDG SPILL CAP	375
65) JDA UP TO 135% TDG SPILL CAP	300
66) TDA UP TO 135% TDG SPILL CAP	400
67) BON UP TO 135% TDG SPILL CAP	240
68) CHJ UP TO 130% TDG SPILL CAP	280
69) GCL UP TO 130% TDG SPILL CAP	RO=42; DRUMGATE=120

DRAFT



# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

March 27, 2013 9:00am - 12:00pm

### TMT MEETING

Phone Number (877) 336-1274

Access Code 3871669

Security Code 7531

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnnw.net](mailto:rgumpert@cnnw.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

## AGENDA

1. Welcome and Introductions
2. Review March 13 Meeting Minutes
3. Chum Operation - Paul Wagner, NOAA Fisheries and Doug Baus, COE-NWD
4. TAC Adult Forecast - Charles Morrill, WDFW
  - a. [2013 Forecasts](#)
  - b. [NOAA Fisheries Service Forecast](#)
5. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
6. Other

- a. Set agenda and date for next meeting - **April 3, 2013**
- b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Doug Baus](#) at (503) 808-3995*

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

March 27, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Review Meeting Minutes**

The March 13 meeting Official Minutes and Facilitator's Notes were reviewed and approved with no edits.

### **Chum Operations Update**

Paul Wagner, NOAA, requested on behalf of the salmon managers an extension of the current Bonneville operation to protect any remaining emerging chum. He said a field trip out to the area confirmed that the re-wetting operation was indeed aiding in keeping the higher, 13.5 foot, elevation wetted, and that this water was also providing additional velocity to move the fish out. Because of the uncertainty about whether end of emergence had occurred (this point was reiterated by Charles Morrill, Washington, who reported that numbers observed at the Bonneville Juvenile Fish Facility (SMP) had picked up about a week ago but since then there had been no sightings, adding to the uncertainty), the action agencies agreed to continue the operation for one additional week. Tony Norris, BPA, stated his agency's preference for a determined end date for this operation which would allow for some operating flexibility. BPA is looking for an operation that supports the chum and is cost-effective. He agreed to continue operation for another week based on the uncertainty conveyed by the salmon managers today.

**Action/Planned Operation:** Doug Baus said the Corps will continue to implement the current operation, a minimum 11.8 foot tailwater at Bonneville with 1 hour per day increments of rewetting of 13.5 feet. TMT will revisit this issue during their next meeting on 4/3.

### **TAC Adult Forecast**

Charles Morrill, Washington, presented a PPT, linked to the agenda, of the TAC adult return forecasts for 2013. They are as follows:

- Upriver Spring Chinook : 141,400; lower than 2012 count, run timing anticipated to be later, peaking around 5/7
- Snake River Spring/Summer Chinook: 58,200 (18,000 wild); much lower than recent years
- Upper Columbia Spring Chinook: 14,300 (16,000 wild); wild component close to 10-year average

- Upper Columbia Summer Chinook: 73,500 – higher than 2012
- Columbia River Sockeye: 180,500; well below 2012
- Snake River Sockeye: 1,250; up from 2012
- Upriver Summer Steelhead: not using same methodology as above, but anticipate around 300,000
- Upriver Fall Chinook: 540,000; higher than 2012
- Snake River wild Fall Chinook: 31,600; well above recent past years
- Upriver Coho at Bonneville: increased forecast
- Coho smolts released: This graph showed that releases in to the Snake have been increasing since 1987
- Upriver salmonid returns: ~1.3 million total
- Lamprey: there is no forecasting mechanism for lamprey, but Charles with the assistance of Dave Wills, USFWS, looked at day, nighttime and lamprey structure counts to provide an outlook for 2013 based on recent returns but still below recent peak years of abundance in 2002 and 2003. Charles also included a passage timing graph.

**Action:** A question was asked about NOAA’s adult salmonid return forecast using its ocean conditions methodology – this was presented to the NPCC at the same time that the above TAC presentation occurred. Paul Wagner will send a link to Doug Baus for posting and sharing with TMT participants as an item of interest.

### **Operations Review**

Lamprey construction work at Bonneville: Doug Baus, Corps, said the lamprey structure work at Bonneville had been completed. Tom Lorz, CRITFC/Umatilla, said he and others were seeing lower numbers of adult salmonid passage at the Washington Shore ladder (powerhouse 2) in comparison to passage numbers at powerhouse 1, when the reverse is usually true at this time of the year. There was concern that the construction of the new Lamprey Flume System might be having an impact. Doug said the Corps is also monitoring this closely, and suggested that this is an FPOM issue and the main points of contact for the Corps are Sean Tackley and Tammy Mackey from the Portland District. The monitoring is showing low returns but within historic limits. FPOM will include this topic on their 4/11 meeting agenda; and will revisit sooner as needed if the problem persists/gets worse.

Lower Granite testing: Lisa Wright, Corps, reported that the Corps did some preliminary outreach to the region about doing a survey to collect velocity data at Lower Granite concurrent with start of spring spill. This would have required an operation outside the planned MOP operations at Lower Granite, and given the feedback from the region, the Corps has decided to forgo the test until later in the spring when

flows pick up. She added that the Fish Operations Plan will be filed with the court this week and it includes no significant changes from last year. The FOP includes a MOP+2 operation at Lower Granite as was done last year to support safe navigation.

Reservoirs – John Roache, Reclamation, reported on projects: Hungry Horse was at elevation 3536.5 feet, with 2.0 kcfs outflows. The end of month flood control elevation is 3537.1 feet and Hungry Horse is forecasted to be close to that elevation. Grand Coulee was at elevation 1282.8 feet and operating to meet chum, Vernita Bar and a 4/10 elevation objective of 1279.9 feet – the end of March flood control elevation is 1282.6 feet.

Lisa Wright, Corps, reported on projects: Libby was at elevation 2394.1 feet with 3.8 kcfs inflows and 4.0 kcfs outflows. Albeni Falls was at elevation 2055.6 feet, with 17.8 kcfs inflows and 20.1 kcfs outflows. Dworshak was at elevation 1558.1 feet, with 4.9 kcfs inflows and 1.6 kcfs outflows.

Lower Granite day average inflows were 33.0 kcfs; at McNary, 100.2; and at Bonneville, 132.7 kcfs.

Fish – Paul Wagner, NOAA, reported on adults: 142 Spring Chinook have been counted at Bonneville and adult wild Steelhead numbers are looking good so far, close to the 10 year average. He also reported on juveniles: yearling Chinook counts on the Salmon River were about 1,000/day during a hatchery release and now down to about 200/day, with 340 counted at Lower Granite on 3/26. Bonneville numbers were back down to less than 100/day after a bump up due to hatchery release. Subyearling Chinook counts at Bonneville were 200-300/day; coho, steelhead and lamprey counts were still very low. The kelt trigger of 2 observed for 2 days was met on 3/22, so the corner collector at Bonneville was opened.

Water Quality – Laura Hamilton, Corps, reported that all the fixed monitoring stations are now on line; no exceedances have been logged yet. The Corps will continue to use Oregon’s method for calculating the high 12-hour average. Warrendale TDG readings were about 105-107%. She also noted that the Corps took TMT’s advice and changed the format of the report so exceedances will show up clearly. TMT members thanked her team for responding to that request.

Power System - -Nothing to report.

### **Next Meeting, 4/3 Face to Face**

Agenda items include:

- Kootenai Tribe SOR
- Chum Operations Update
- Finalize TMT Guidelines

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

**March 27, 2013**  
Notes: Pat Vivian

#### ***1. Introduction***

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of the COE, BPA, Montana, NOAA, Washington, USFWS, Idaho, BOR, CRITFC/Umatilla and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### ***2. Review of Meeting Minutes – March 13, 2013***

There were no comments on either the official minutes or facilitator's notes for the March 13 meeting. The minutes and notes can be considered final unless future concerns are raised.

Tom Lorz, CRITFC/Umatilla, added two items to today's agenda: (1) an update on adult lamprey modifications at Bonneville in relation to observed fish counts at the Washington Shore ladder, and (2) possible COE's operational changes at Lower Granite to support ADCP testing as discussed at FPAC. These two topics were addressed at the end of today's meeting as part of the standard operations review.

#### ***3. Chum Operation***

Paul Wagner, NOAA, reported that enough temperature units have accrued for chum spawning to be considered done. However, extending the operation for another week or more would help ensure that all fry escape the rewetted spawning areas around 13.5 feet elevation in the Bonneville tailwater. In light of this uncertainty, Tony Norris replied that BPA would like a projected date for ending the chum operation, preferably the end of March so there is a period of flexibility before flow restrictions associated with spill season begin. Furthermore, ending the stipulation that rewettings occur daily up to 13.5 feet in the Bonneville tailwater would not necessarily leave those areas high and dry.

Wagner said he will confer with WDFW researchers on their assessment of emergence timing; Norris said he'll find out the lowest projected elevation in the Bonneville tailwater if chum restrictions are removed. TMT scheduled another meeting in a week to discuss how to end the chum operation.

#### ***4. TAC Adult Forecast***

Charles Morrill, Washington, gave a presentation and slideshow on the 2013 run forecasts presented in the 2013 Joint Staff Report of the Columbia River Compact

Technical Advisory Committee. The TAC presentation is attached to this item on today's agenda. Forecasts are as follows:

Upriver spring chinook – The forecast of 141,400 adult returns represents a decline over past years returns of mid/upper Columbia and Snake River stocks. Typically about 53% of the run is Snake River stock, and about 10% upper Columbia.

Snake River spring/summer chinook – The 2013 forecast is 58,200 returns, with 18,000 of these naturally produced wild fish. This year's forecast is about 68% of the 10-year average.

Upper Columbia Spring Chinook – The 2013 forecast of 14,300 fish, with a wild component of 1,600 fish, is the same as last year's actual count. The wild component is about 11% of the run, close to average for the past 10 years.

Upper Columbia Spring/Summer Chinook – This year's forecast of 73,500 fish is an improvement over last year's actual return of 58,300 adults. The wild proportion of these fish is about 20%.

Columbia River Sockeye – After last year's phenomenal return of 521,000 fish, this year's return is forecast to be only 180,500. The Wenatchee run is forecast to be 44,600 fish and the Okanogan run, 134,500 fish. The goal for upper Columbia sockeye this year is 65,000 fish returning to Priest Rapids Dam and 75,000 fish returning to Bonneville Dam.

Snake River Sockeye – The 2012 return was only 500 fish, with the 2013 return forecast to be 1,250 fish. This run has seen a gradual increase since 2008. The conversion from Lower Granite Dam to the Columbia River mouth is forecasted as 446 fish and 511 fish, respectively. Last year, 87% of sockeye counted at the Columbia River escaped from the river mouth to Lower Granite. About 54% of the run or 243 fish that were observed at Lower Granite reached Stanley basin.

Upriver Summer Steelhead – We don't have tools to forecast upriver summer steelhead runs, but available information indicates a return of about 300,000 fish. The 10-year average is 300,000 fish.

Upriver Fall Chinook – The forecast is about 540,000 fish, with an expected return of 432,000 for the upriver bright component. This would be a substantial improvement over the 2003-2012 average.

Snake River Wild Fall Chinook – This year's forecast of 31,600 fish to the Columbia River mouth is a substantial increase over prior years.

Upriver Coho at Bonneville Dam – Returns have been increasing steadily since 2001. This run tends to have low survival rates.

Upriver Coho Smolt Releases – This chart shows in millions the proportion of smolts released upriver.

Upriver Salmonid Returns – This chart compares total returns of chinook, sockeye, steelhead and coho runs.

Lamprey – While there is no official forecasting process for adult lamprey returns, Morrill and David Wills, USFWS, compiled a graph based on dam counts plus daytime and nighttime window counts at the Bonneville fish ladder from April 1 to December 30. The daytime counts are about 34-35% of total counts for 2009-2013, indicating that lamprey survival has improved in recent years. Peak levels of abundance occurred in 2002 and 2003.

When Morrill asked for questions, Jim Litchfield, Montana, mentioned NOAA's recent presentation to the Council, which involved using monitoring data to produce a forecasting model. Wagner said a key message of that presentation was that a number of factors are involved in doing a better job of predicting returns. Morrill will provide a link to the latest information from TAC on forecasting methodology, to be posted to the TMT web page.

## **5. Operations Review**

**a. Reservoirs.** As requested at the beginning of today's meeting, Baus provided updates on lamprey work at Bonneville Dam and tentative discussions regarding possible Lower Granite Dam MOP adjustments associated with upcoming ADCP surveys..

Update on Bonneville Lamprey Flume System Construction – There have been concerns about the effects on adult salmonids of the recent lamprey flume system (LFS) installation on the Washington shore fishway at Bonneville. At this time no correlation has been made between installation of the LFS and any impacts on fish passage. The installation has been completed and the broken component repaired. Lorz expressed concern about comparatively low observed fish passage through the ladder versus counts at powerhouse 1, when the reverse is usually observed during powerhouse 2 priority. He advised that something be done about this before the adult run arrives at Bonneville. Fish passage numbers at the Washington Shore ladder are lower than last year but within the historic range, Lisa Wright, COE, replied. Project biologists are inspecting the area daily and keeping a close eye on the situation. Baus reminded everyone that the lamprey installation was coordinated through FPOM.

Potential ADCP Testing at Lower Granite – The COE explored the option of implementing ADCP tests to take velocity data in the Lower Granite tailrace on back-to-back dates on April 4 and 5, Wright reported. The intent was to streamline data collection and do surveys at two flow conditions on consecutive days. However, there were concerns about the need to exceed the 1-foot MOP operating range after April 3 when spill season starts, so the COE maintained the original plan of implementing

testing when flows match the conditions being studied. Thus the testing will not require a MOP variance. Wright noted that the 2013 FOP has no significant changes from previous years. It will be filed with the court soon, probably this week. The 2013 operation for Lower Granite includes a variable MOP operation as it has in past years to accommodate sediment issues.

Hungry Horse is at elevation 3536.5 feet, with 2 kcfs releases. The end of month flood control elevation target is 3537.1 feet. Grand Coulee is at elevation 1282.8 feet. The end of month flood control target is 1282.6 feet and the April 10 elevation objective is 1279.9 feet.

Libby is at elevation 2394.1 feet, with inflows of 3.8 kcfs and releases of 4 kcfs. Albeni Falls is at elevation 2055.6 feet, with inflows of 17.8 kcfs and releases of 20.1 kcfs. Dworshak is at elevation 1558.1 feet, with inflows of 4.9 kcfs and releases of 1.6 kcfs. Lower Granite daily average inflows are 33 kcfs. McNary daily average inflows are 100.2 kcfs. Bonneville daily average inflows are 132.7 kcfs.

**b. Fish. Adults:** Passage is just beginning, with 132 spring chinook passing Bonneville to date. Adults are not yet taking advantage of the fact that sea lions are being distracted by millions of smelt in the river. Steelhead at Lower Granite that have chosen to overwinter are charging ahead. Wild steelhead numbers are a larger ration this time of year than later in the passage season. The numbers are close to the 10-year average for this time of year.

Juveniles: Small numbers of juveniles are passing some projects, Wagner reported. For a few days on the Salmon River, a thousand hatchery fish a day were passing, but counts have trailed off to a few hundred fish a day, a mix of wild and hatchery fish. There are some fish passing Lower Granite pool, nothing out of the ordinary. A few weeks ago, a hatchery release passed Bonneville in large numbers that have trailed off to less than 100 fish per day. The Bonneville 2<sup>nd</sup> powerhouse corner collector opened on March 22 when the kelt trigger of 2 kelts for 2 consecutive days was met, Wright reported.

**c. Water Quality.** All fixed monitoring stations are already online for spill season, Laura Hamilton, COE, reported. The 12-hour average for TDG levels at Warrendale gage is around 107.5-107.7% TDG saturation. The Washington standard is a rolling consecutive 12-hour average in a 36 hour period, while the Oregon standard is the average of the 12 highest hours per calendar day (from midnight to midnight). In 2013 the COE will use Oregon's method of calculating TDG levels due to rollover operations under the Court Order, Kim Johnson, COE, noted.

**d. Power System.** There was nothing to report today.

## **6. Next TMT Meeting**

There will be a meeting April 3 to discuss the chum operation and a possible SOR for Kootenai Tribe habitat work. Subsequent TMT meeting dates are April 10, 17 and 24.

<b>Name</b>	<b>Affiliation</b>
Tony Norris	BPA
Jim Litchfield	Montana
Lisa Wright	COE
Paul Wagner	NOAA
Doug Baus	COE
Laura Hamilton	COE
Karl Kanbergs	COE
Kim Johnson	COE

### *Phone:*

Charles Morrill	Washington
David Wills	USFWS
Russ Kiefer	Idaho
John Roache	BOR
Tom Lorz	CRITFC/Umatilla
Heather Dohan	Puget
Don Tinker	SCL
Peter Richardson	XX
Margaret Filardo	FPC
Mike XX	Chelan PUD
Richelle Beck	Grant PUD
Tim XX	Energy GPS
Steve Hall	COE
Russ George	WMC
Bruce McKay	hydropower consultant

# COLUMBIA RIVER SALMON AND STEELHEAD RETURNS

FPAC and TMT – March 2013

Presented by: Washington Department of Fish and Wildlife

# 2013 Columbia River Forecasts

2

- Forecasts and fishery recommendations developed by the Joint Columbia River Management Staff of the Oregon Dept Fish & Wildlife (ODFW) and Washington Dept. Fish & Wildlife (WDFW)
- Presented in the **2013 Joint Staff Report: Stock Status and Fisheries for Spring Chinook, Summer Chinook, Sockeye, Steelhead, and other species, and miscellaneous regulations.** Jan 24, 2013
- <http://wdfw.wa.gov/publications/01452/wdfw01452.pdf>

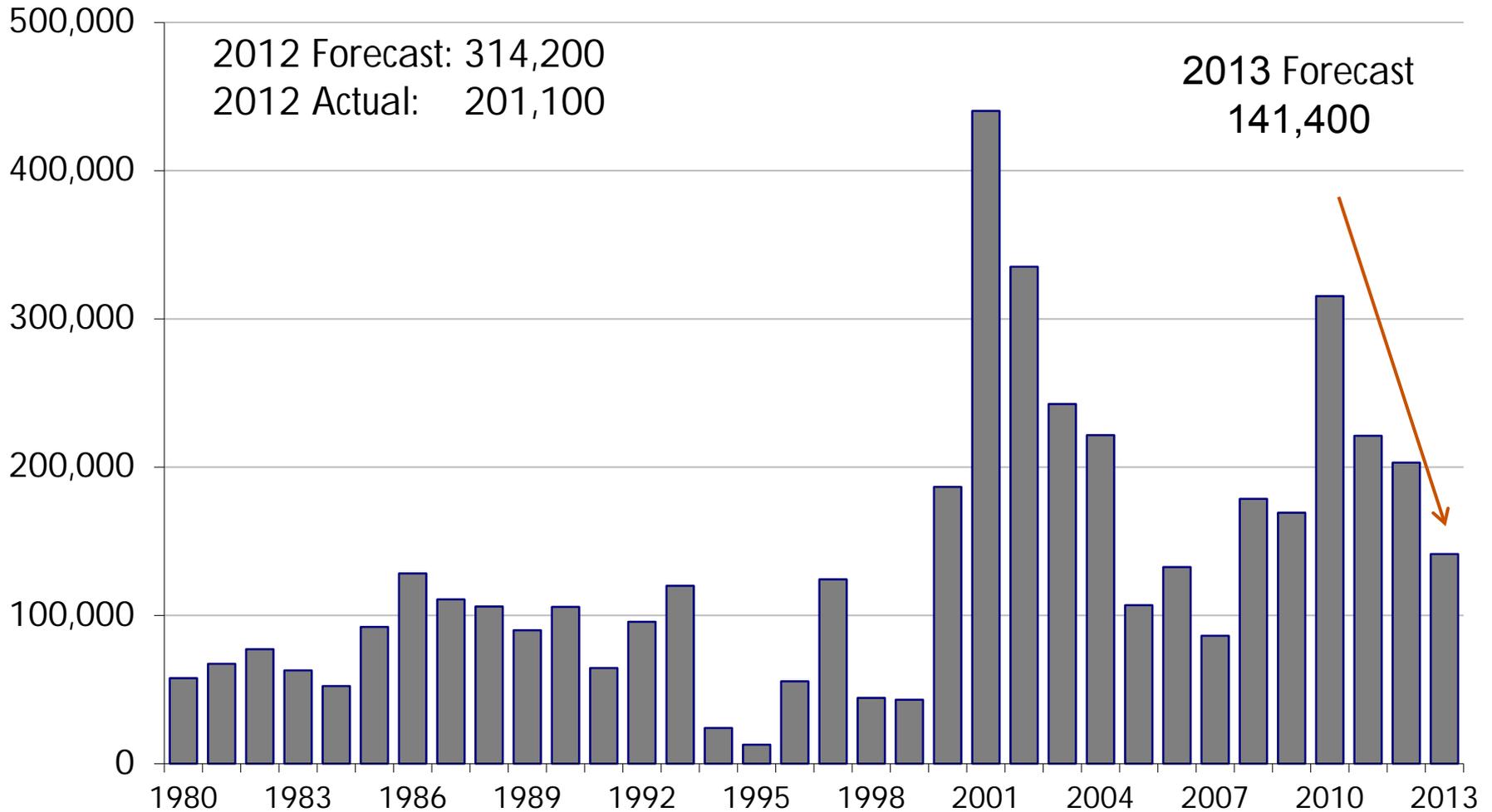
# TAC & Columbia River Compact

3

- Report submitted to and reviewed by the Technical Advisory Committee (US vs Oregon) and to the Columbia River Compact which adopts rules and seasons for Columbia River Fisheries.
- TAC includes staff from Federal and State Agencies & Tribes: USFWS, NMFS, CRITFC, CTUIR, CTWS, NPT, SBT, YN, WDFW, ODFW, IDFG

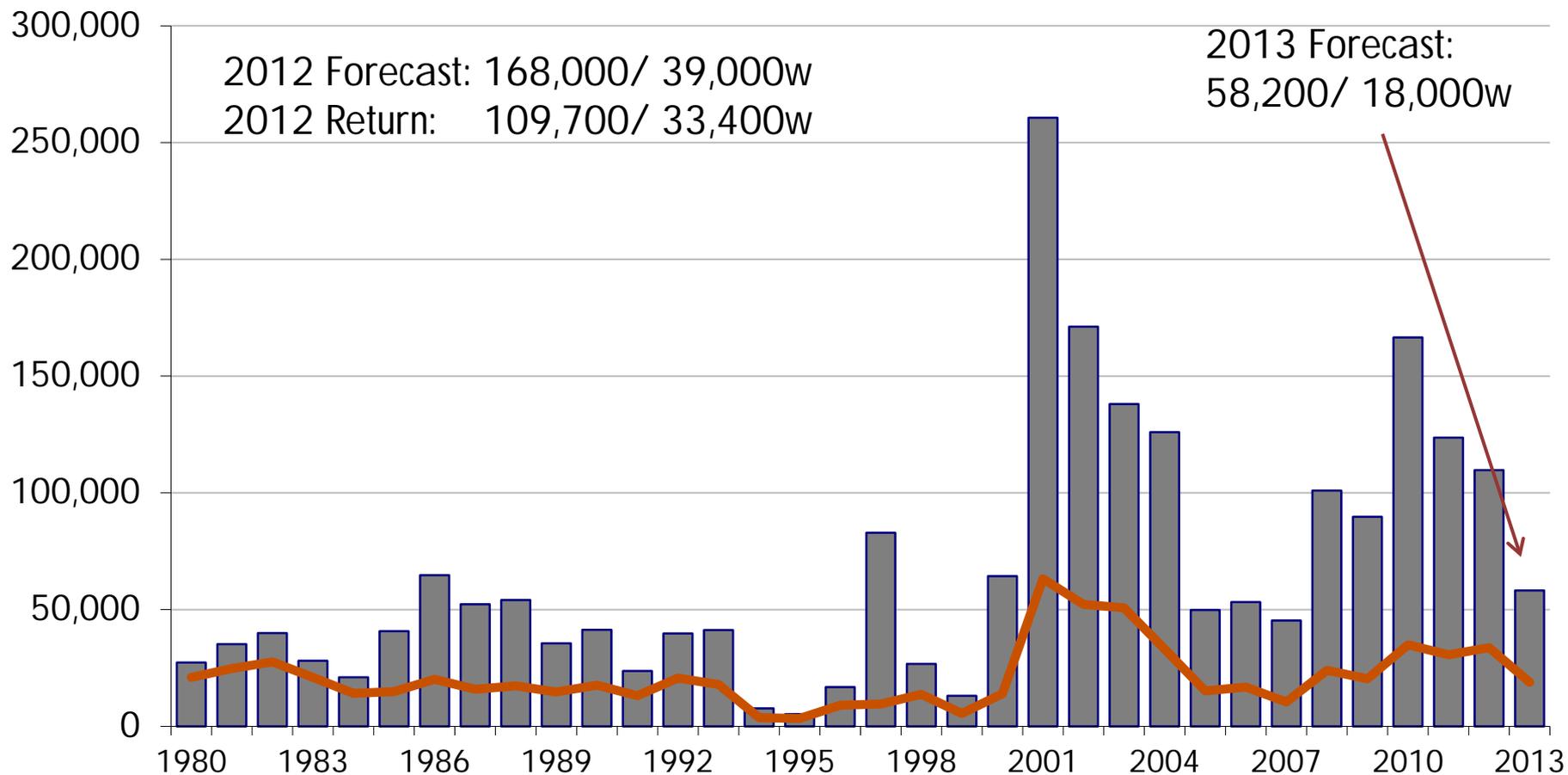
# Upriver Spring Chinook

4



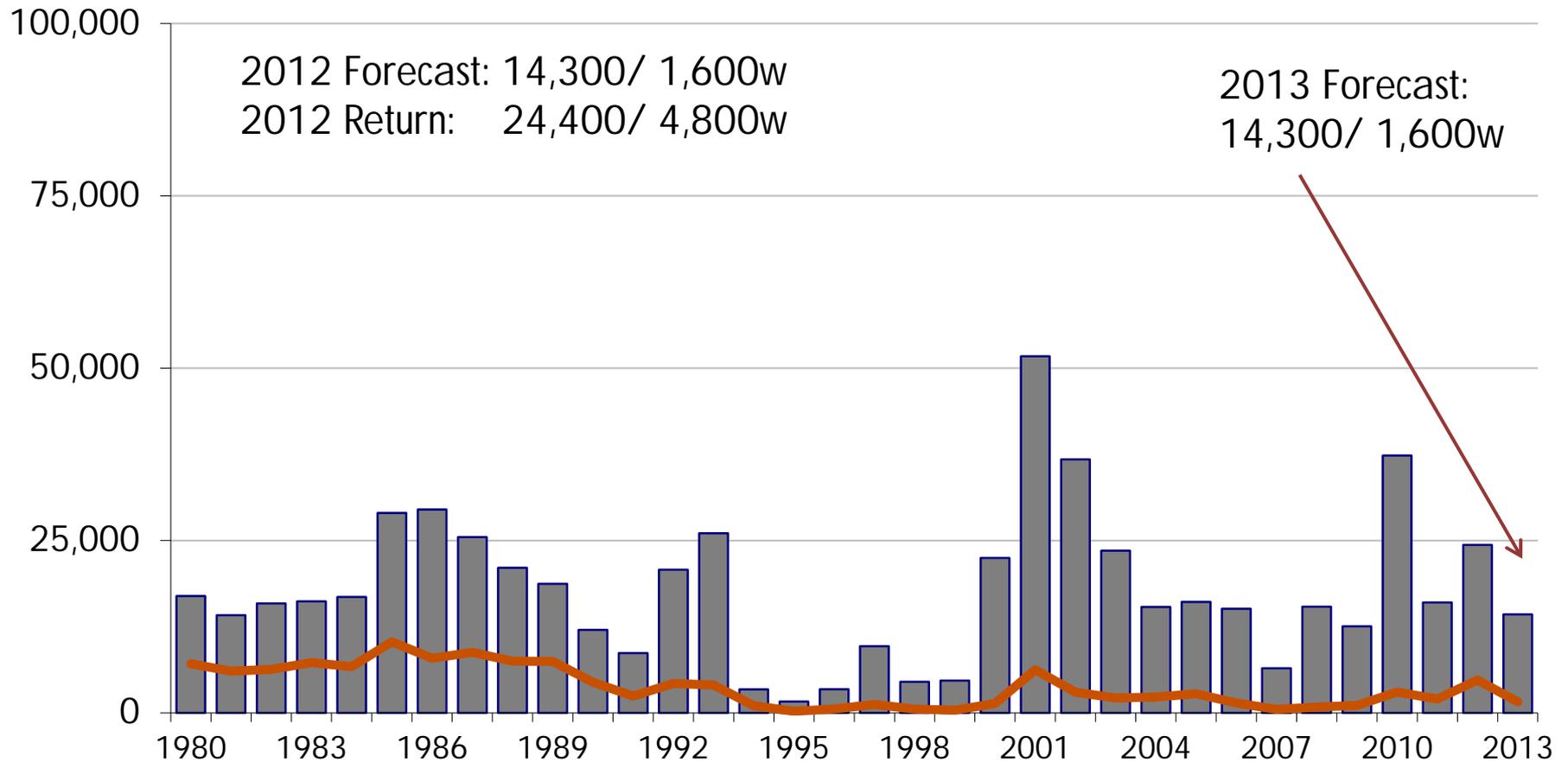
# Snake River Spring/Summer Chinook

5

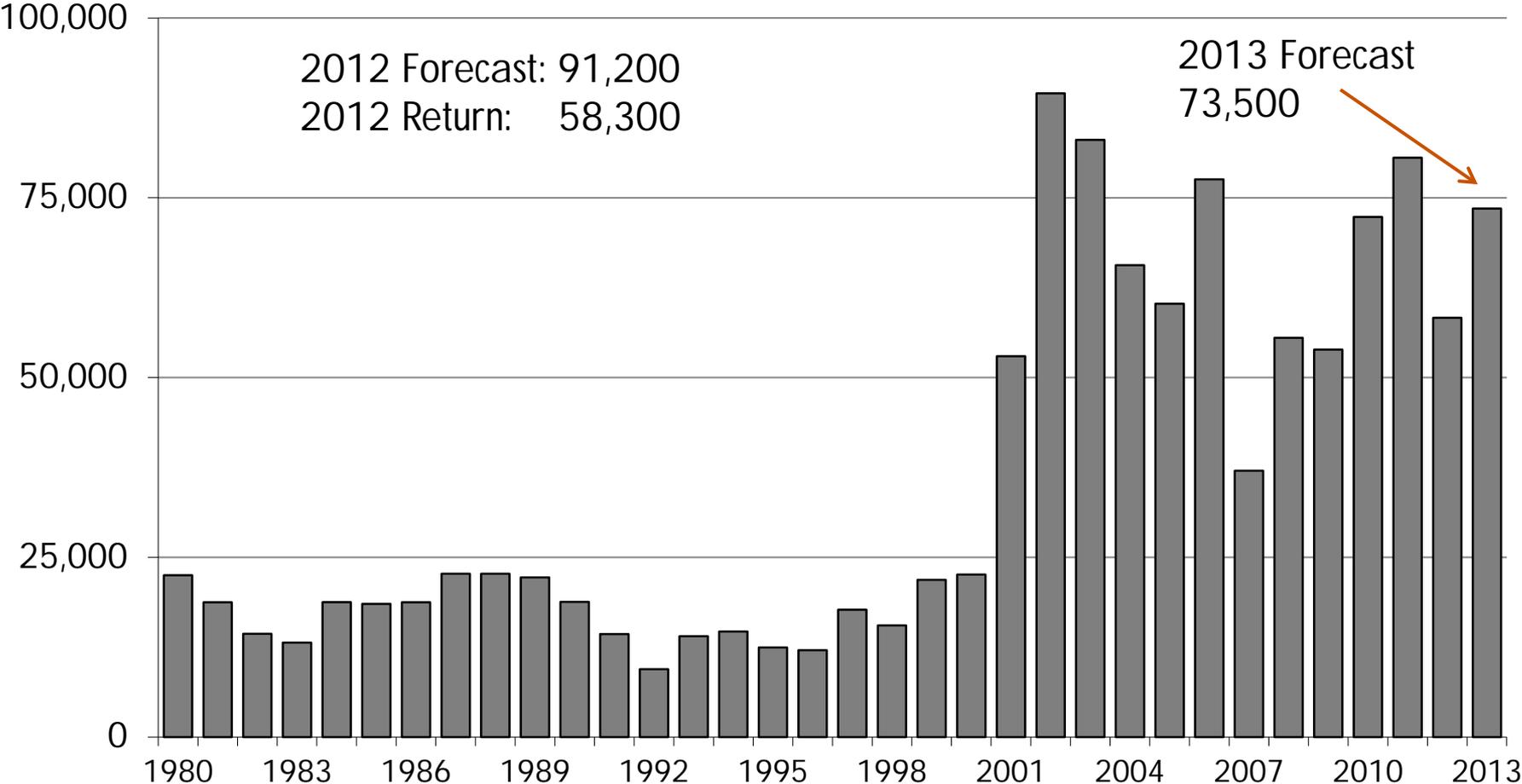


# Upper Columbia Spring Chinook

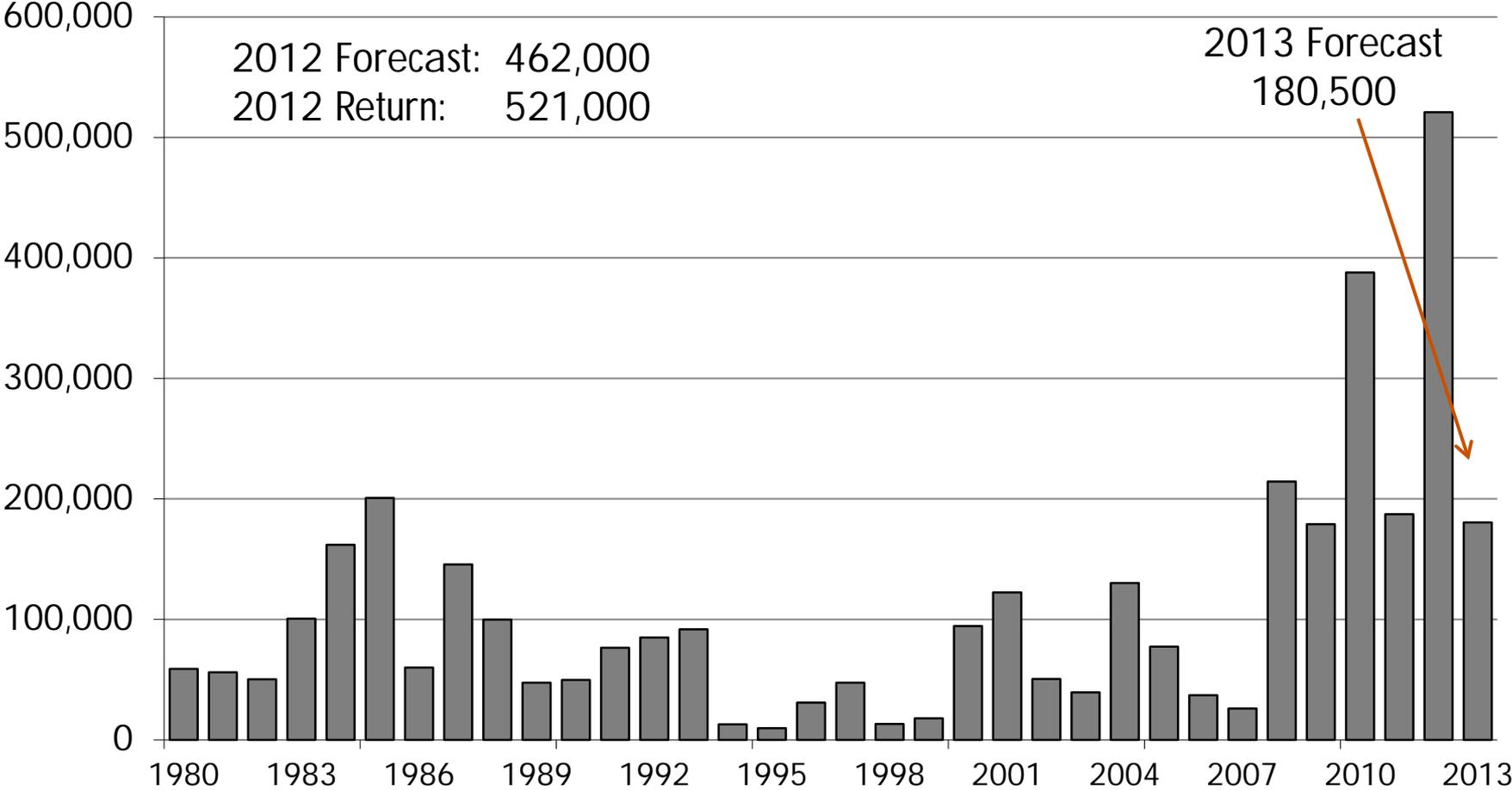
6



# Upper Columbia Summer Chinook

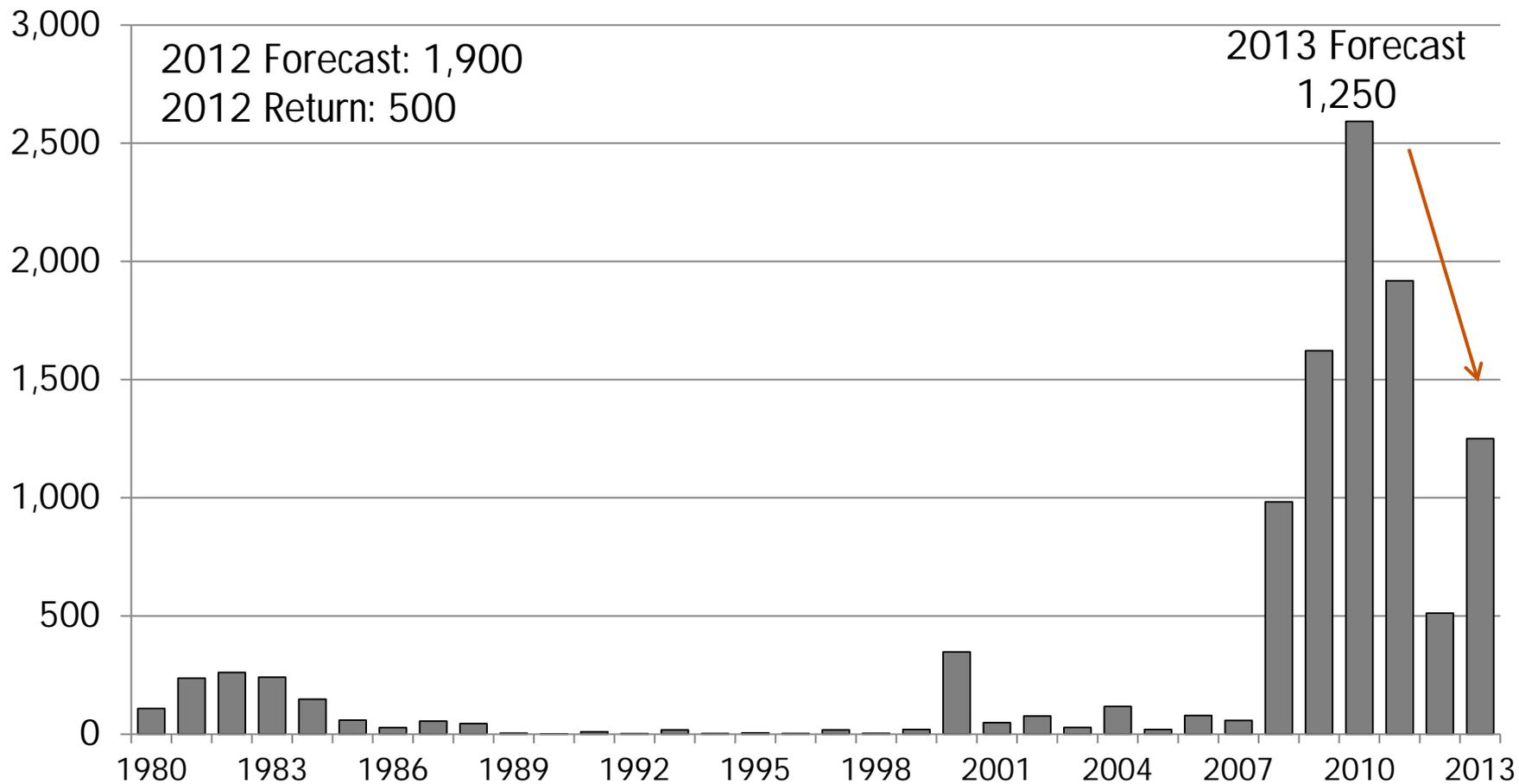


# Columbia River Sockeye



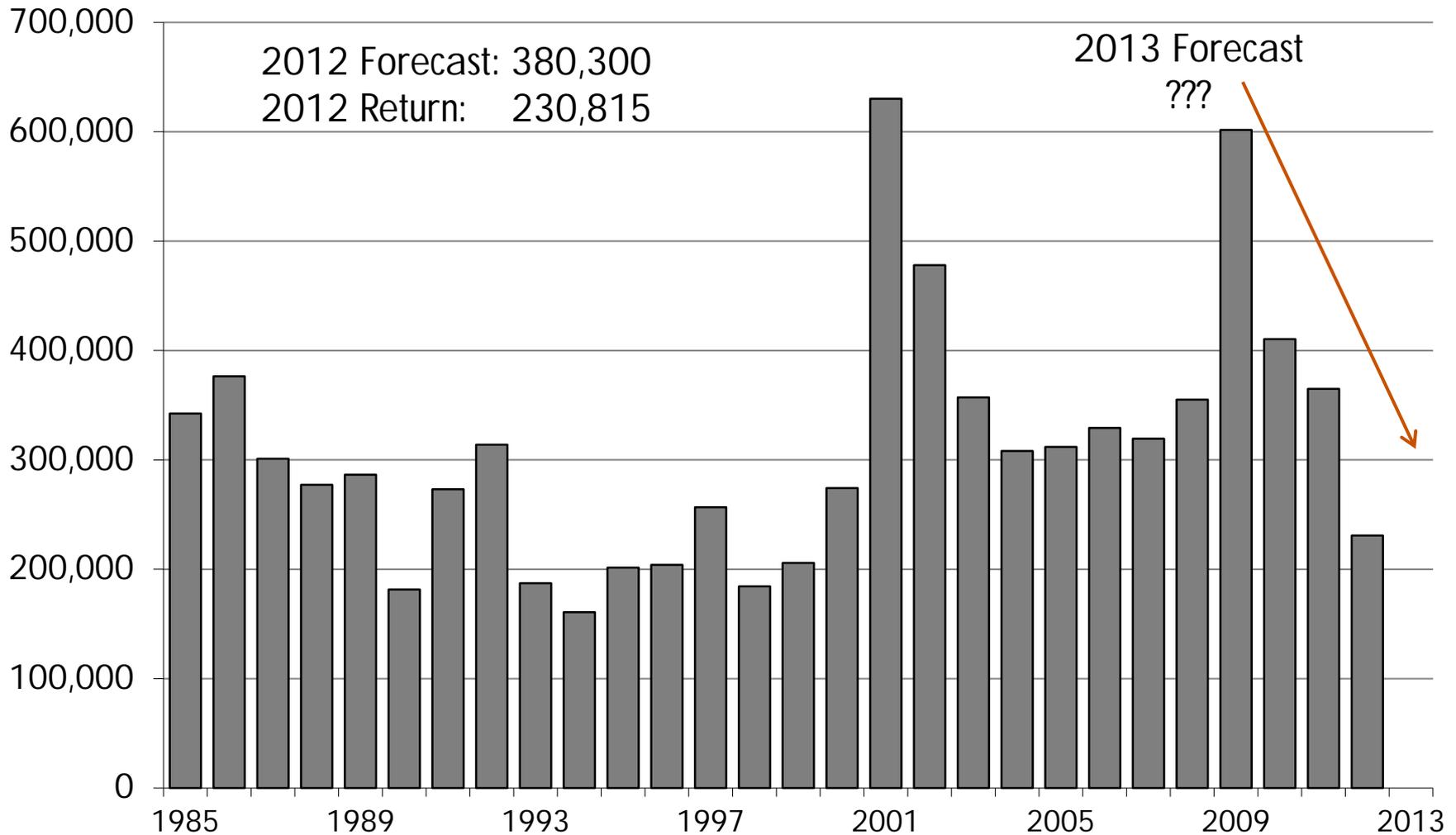
# Snake River Sockeye

9

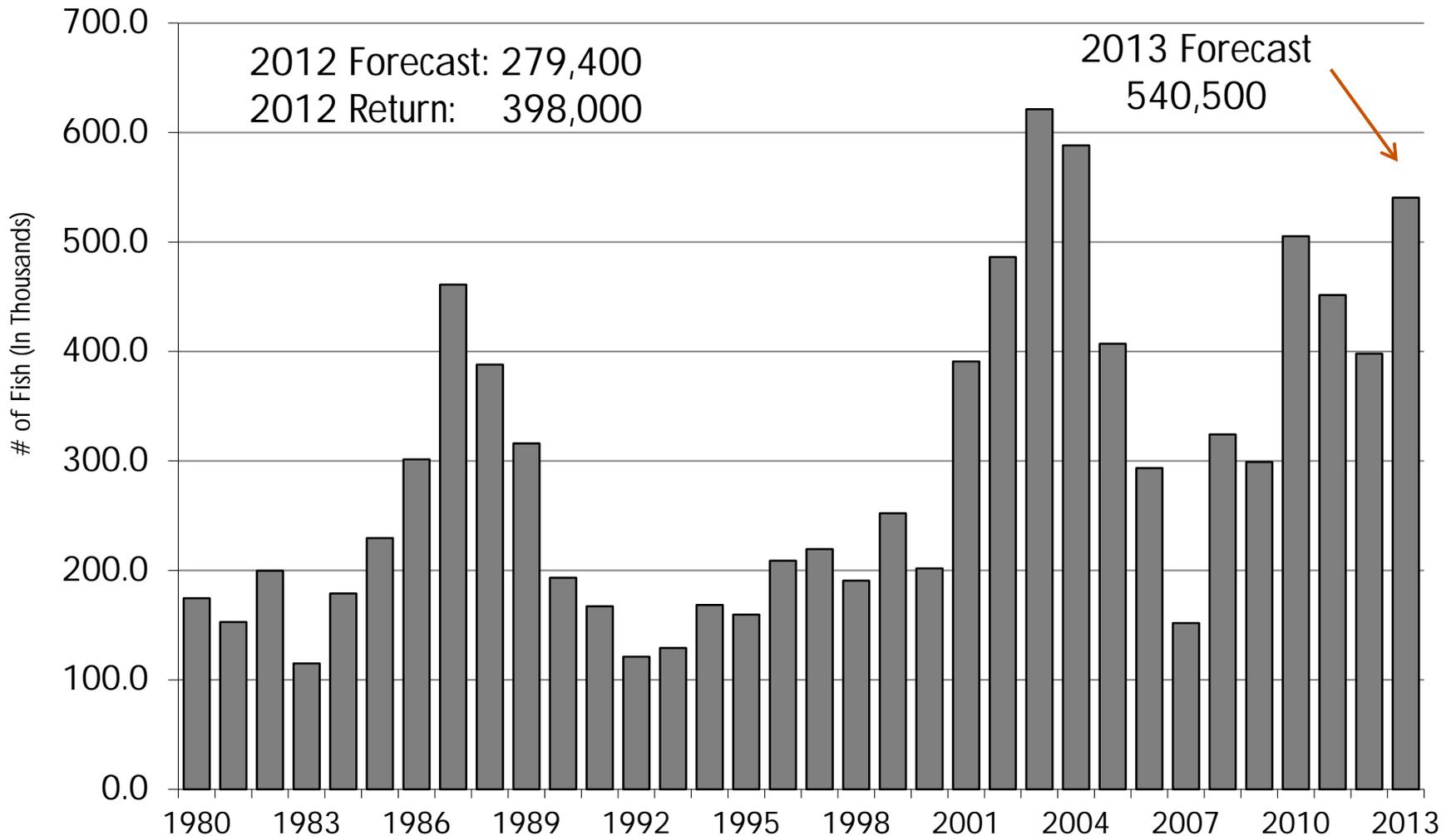


# Upriver Summer Steelhead

10

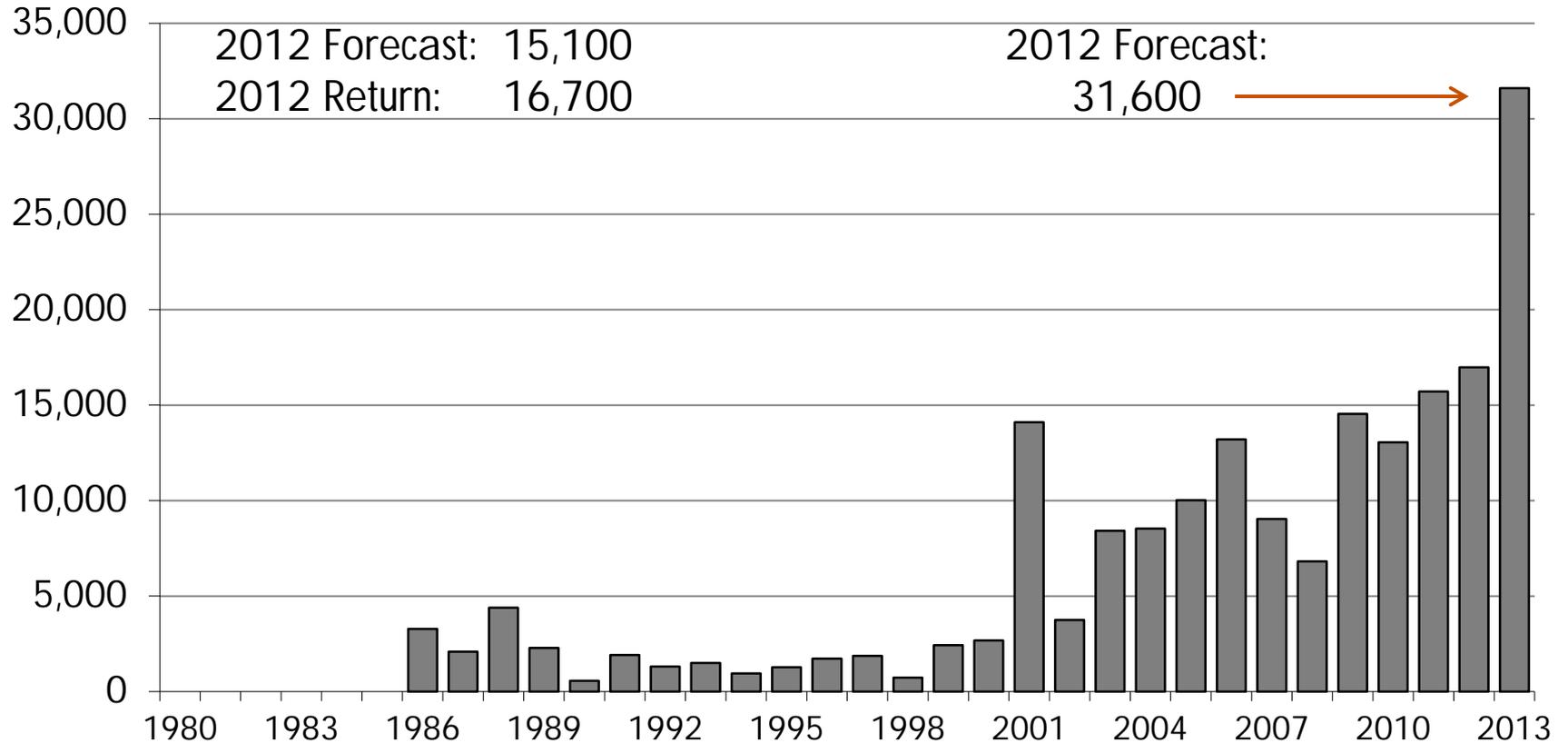


# Upriver Fall Chinook



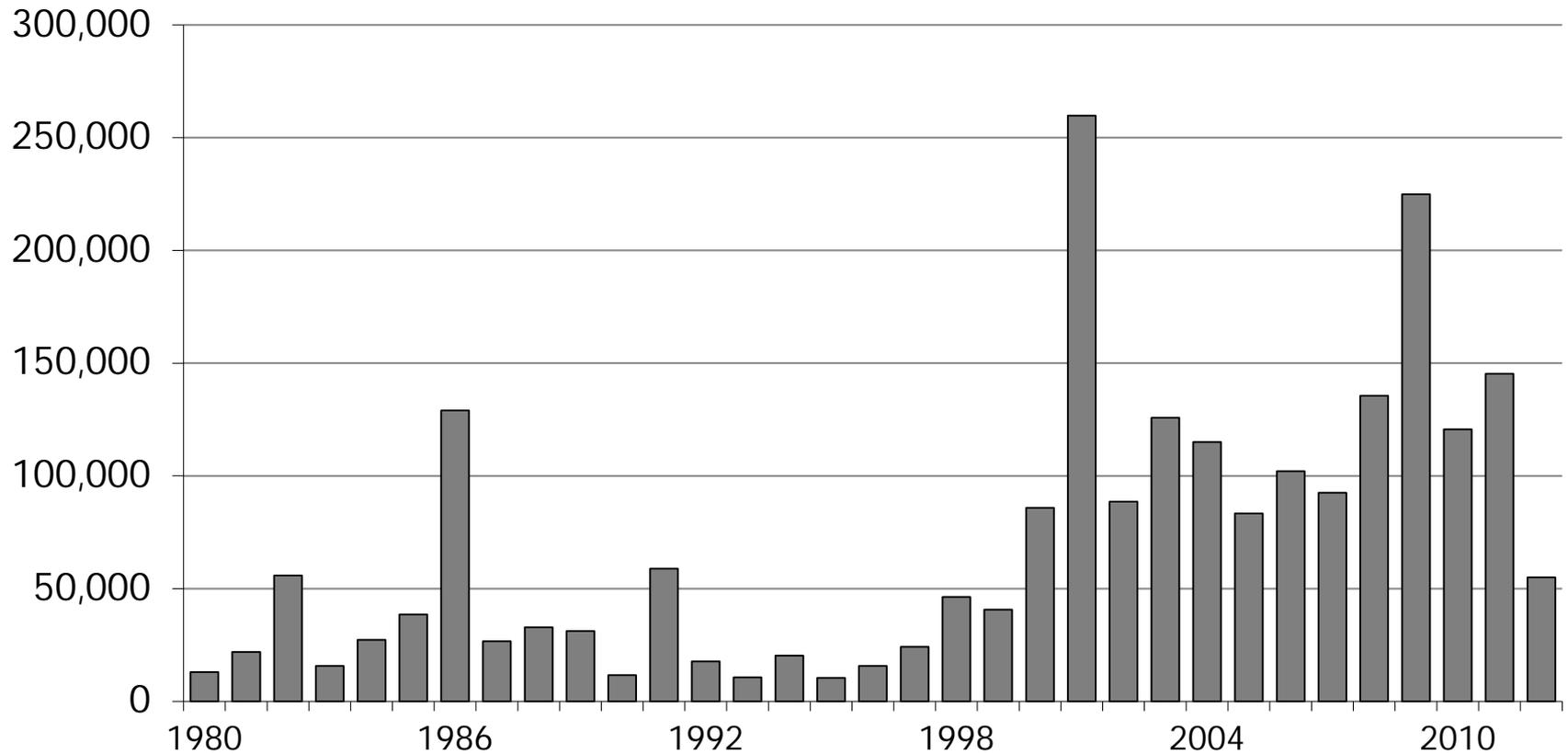
# Snake River Wild Fall Chinook

12



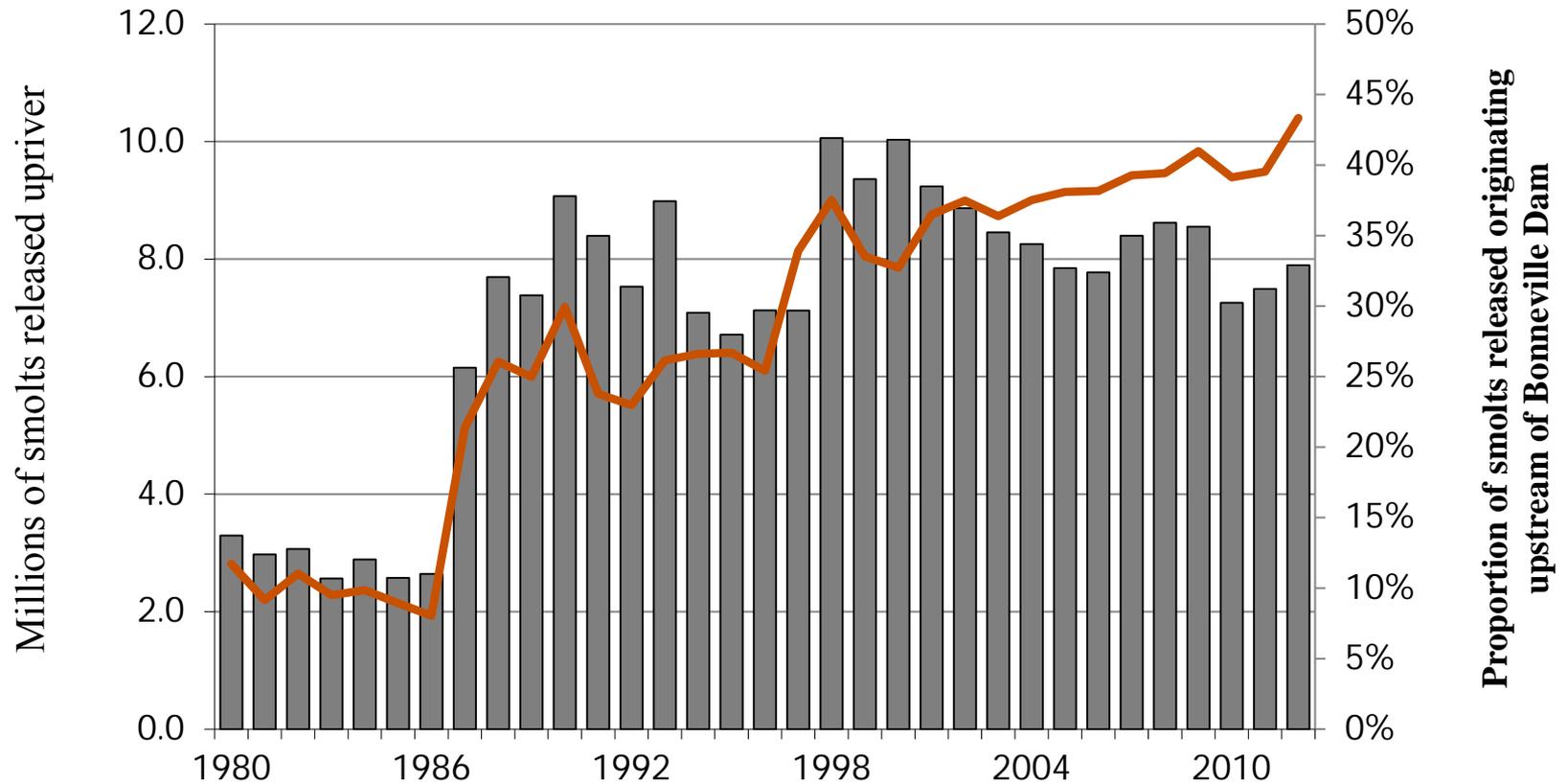
# Upriver Coho at Bonneville Dam

13



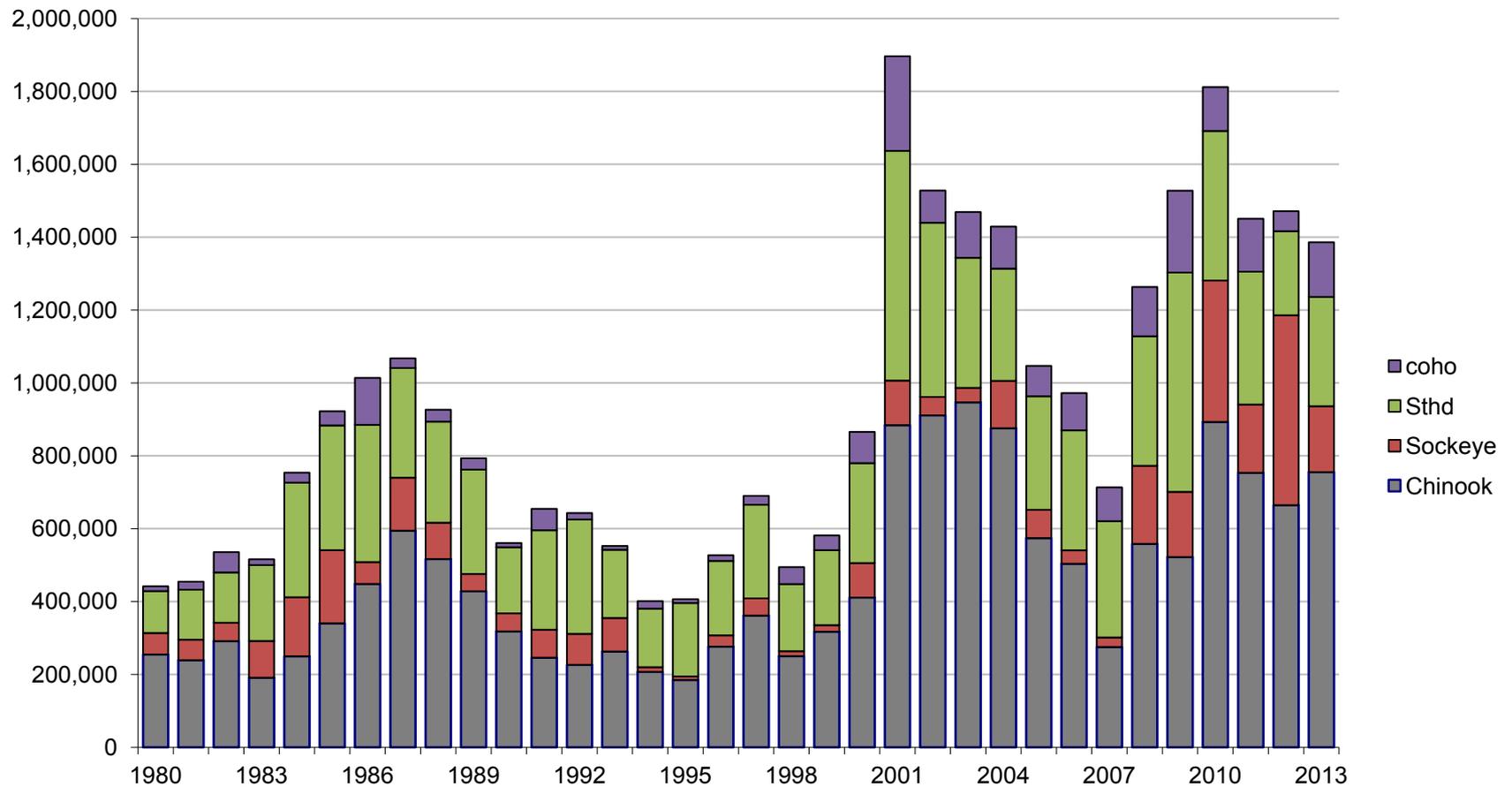
# Upriver Coho Smolt Releases

14



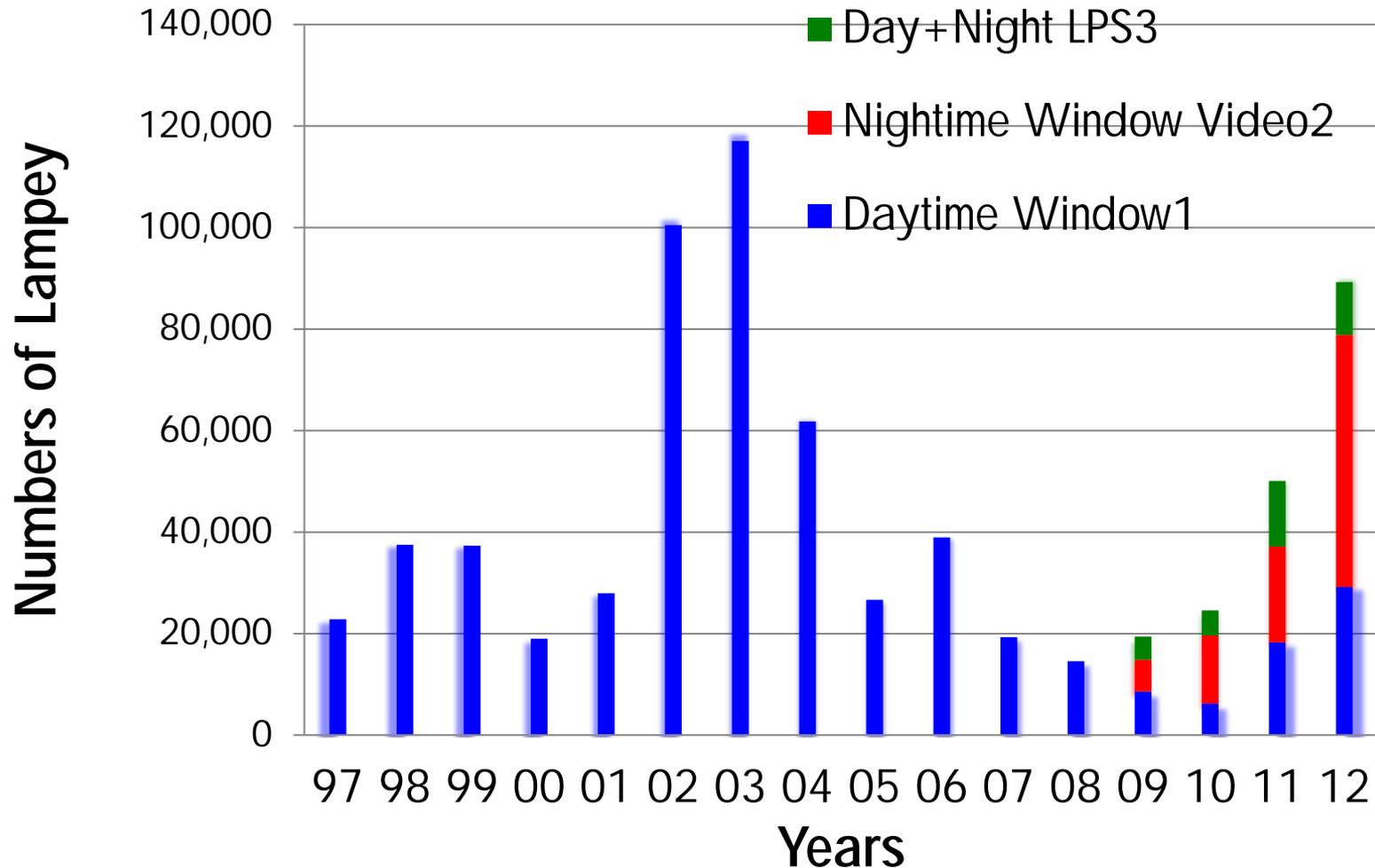
# Upriver Salmonid Returns

15

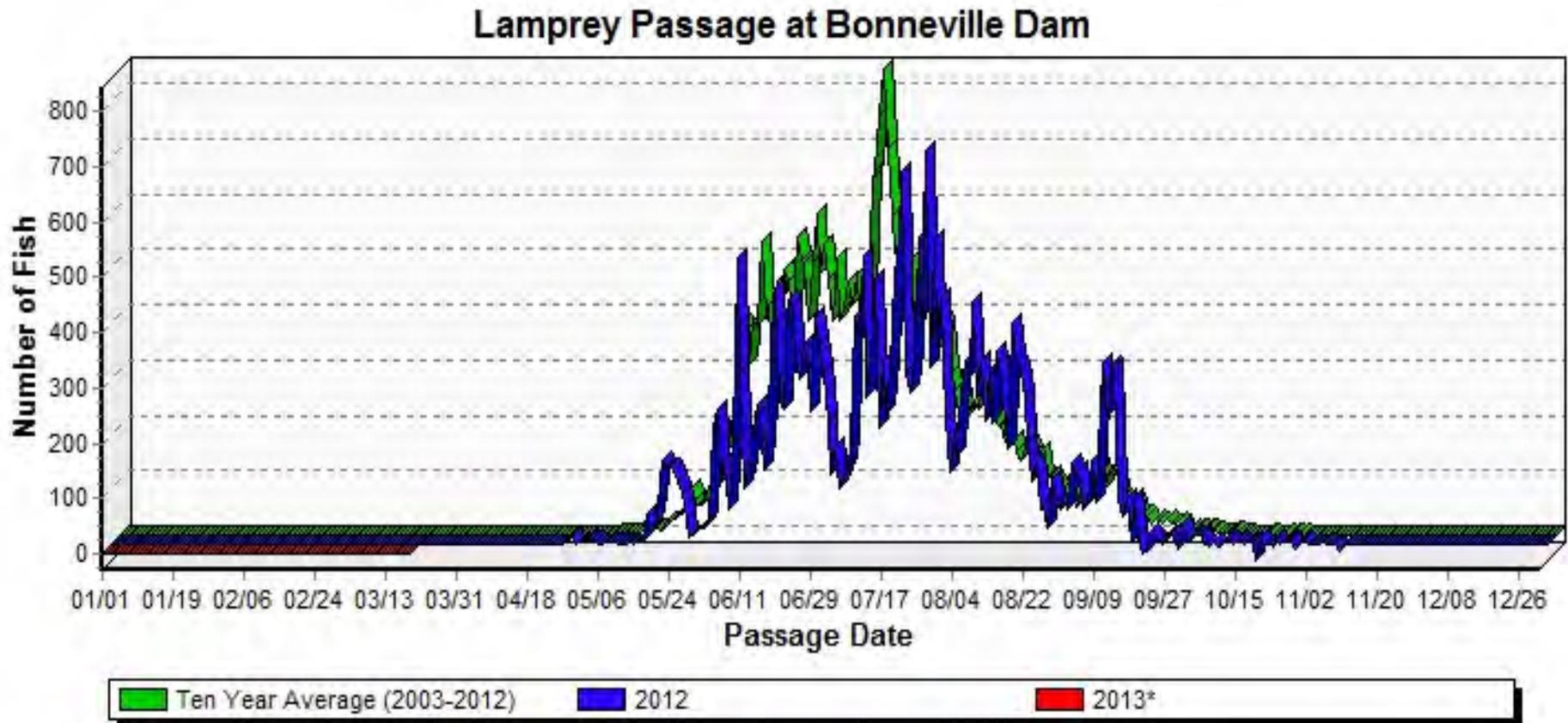


# Total Counts of Adult Pacific Lamprey at Bonneville Dam, 1997-2012

16



# Lamprey Passage at Bonneville Dam



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Graph design last updated on 03/13/13

# Questions?

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March 2013

## **2013 Fish Operations Plan**

### **INTRODUCTION**

The 2013 Fish Operations Plan (FOP) describes the U.S. Army Corps of Engineers' (Corps) planned operations for fish passage at its mainstem Federal Columbia River Power System (FCRPS) dams during the 2013 fish migration season; generally April through August. The 2013 FOP is consistent with the 2011 Court ordered spring and summer spill operations, and the adaptive management provisions in the 2010 NOAA Fisheries FCRPS Supplemental Biological Opinion (2010 Supplemental BiOp)<sup>1</sup> and the Corps' Record of Consultation and Statement of Decision (ROCASOD) adopting the project operations contained in the 2010 Supplemental BiOp and the Columbia Basin Fish Accords (Accords).

As in 2012, the 2013 FOP incorporates planned project operational adjustments necessary to conduct essential research to evaluate fish passage features during the 2013 migration season. Other FCRPS water management actions and project operations not specifically addressed in this document shall be consistent with the 2010 Supplemental BiOp and other guiding operative documents, including the 2013 Water Management Plan (WMP), seasonal WMP updates, and the 2013 Fish Passage Plan (FPP). Operations described herein are consistent with the 2011 Court Order, including adjustments to address in-season developments through discussion and coordination with the regional sovereigns as provided for in the 2010 Supplemental BiOp.

The following sections describe factors that influence management of fish operations during various runoff conditions, including: management of spill for fish passage, spillway operations, minimum generation requirements, operations under low flow conditions, navigation safety, juvenile fish transportation operations, specified spring operations for fish at each mainstem project, protocols for fish protection measures related to operational emergencies, coordination with regional entities, and monthly reporting.

### **GENERAL CONSIDERATIONS FOR FISH OPERATIONS**

For planning purposes, the Corps' 2013 FOP assumes average runoff conditions. As actual runoff conditions vary in timing and shape and may be higher or lower than average in any given year, adjustments in fish transportation and/or spill operations (spill levels, spill percentages, or spill caps) will be adaptively managed in-season. These in-season changes will be coordinated through the Technical Management Team (TMT) and

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<sup>1</sup> The 2010 Supplemental BiOp incorporates the 2008 NOAA BiOp.

other appropriate regional forums, to avoid or minimize adverse impacts to juvenile and/or adult fish passage conditions, navigation safety concerns, or to accommodate powerhouse and/or transmission system constraints. Actual spill levels may be adaptively managed to accommodate fish research or other conditions and will be coordinated through the TMT and other appropriate regional forums.

### **Management of Spill for Fish Passage**

The Corps will manage spill levels for fish passage to avoid exceeding 120% total dissolved gas (TDG) in project tailraces, and 115% TDG in the forebay of the next project downstream consistent with the current State of Washington percent TDG limits.<sup>2</sup> These limits are referred to as gas caps. The maximum project spill level that meets, but does not exceed, the gas cap is referred to as the spill cap. Gas caps are constant, whereas spill caps may vary daily depending on flow, spill operation, spill pattern, temperature, and other environmental conditions.

As noted above, the spill levels presented below in Tables 2 and 3 are planned spill operations and assume average runoff conditions; however, adjustments to these spill rates may be necessary. Reasons for these adjustments may include:

1. Low runoff conditions that may require adjustments in spill level while still meeting project minimum generation requirements.
2. High runoff conditions where flows exceed the powerhouse hydraulic capacity with the specified spill rates.
3. Navigation safety concerns.
4. Generation unit outages that reduce the powerhouse hydraulic capacity.
5. Power system or other emergencies that reduces powerhouse outflow.
6. Lack of power demand resulting in an increase in spill levels.

The Corps' Reservoir Control Center (RCC) is responsible for daily management of spill operations responsive to changing TDG conditions. In order to manage gas cap spill levels consistent with the states' TDG saturation limits, the RCC establishes the TDG spill caps for the lower Columbia and Snake River projects on a daily basis throughout the fish passage season. The resultant TDG spill caps are set to provide percent TDG saturation levels that are not expected to exceed the 120%/115% TDG limits, which are measured as the average of the highest 12 hourly readings for each day.

Within any given day, some hours of measured TDG levels may be higher or lower than the gas caps due to changing environmental conditions (wind, air temperature, etc.). The process of establishing daily spill caps entails reviewing existing hourly data at each dam

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<sup>2</sup> The 2010 Supplemental BiOp provides: "Specific spill levels will be provided for juvenile fish passage at each project, not to exceed established TDG levels (either 110 percent TDG standard, or as modified by State water quality waivers, currently up to 115 percent TDG in the dam forebay and up to 120 percent TDG in the project tailwater...). In February 2009, the State of Oregon modified its 5-year waiver to remove the 115% forebay TDG limit. However, the Corps will continue to manage to 120% and 115% (the Washington TDG standard) consistent with the 2011 Court Order in 2013.

(including flow, spill, temperature, and TDG levels) and taking into consideration a number of forecast conditions (including total river flow, powerhouse flow, wind and temperature forecast, etc.). These data are used as input variables into the System TDG (SYSTDG) model. The SYSTDG model estimates TDG levels expected several days into the future and is a tool integral to daily decision-making when establishing spill caps at individual dams. Spill caps set by RCC and contained in the daily spill priority list will be met at the projects using the individual project spill pattern(s) contained in the FPP Sections 2 through 9, that most closely corresponds to the specified spill level (i.e. may be slightly over or under the specified spill level or percent value). During the spring freshet, when river flow may be greater than project powerhouse hydraulic capacity given the specified FOP spill level, or a lack of power load results in an increase in the spill level, the Corps will attempt to minimize TDG on a system-wide basis. In this case, spill caps are also developed for 122%, 125%, 127%, 130%, or 135% TDG as a means of minimizing TDG throughout the system.

The Corps will initiate spill at 0001 hours, or shortly after midnight, at each of the projects on the start dates specified in the project sections below. Spill caps will be established at the specified FOP levels and will continue unless conditions require changing to maintain TDG within the upper limits of 120% in the tailwater of a dam and 115% in the forebay of the next project downstream (and at Camas/Washougal<sup>3</sup> - except during the summer two-treatment alternating operation). Unless otherwise specified, spill will transition to summer levels at 0001 hours, or shortly after midnight, at each project on the day after spring spill ends, (specified in the project sections below). Operations to manage TDG will continue to be coordinated through the TMT.

### **Spillway Operations**

The Action Agencies will meet the specified spill levels to the extent feasible; however, actual hourly spill levels at each dam may be slightly more or less than those specified in Tables 2 and 3 below. Actual spill levels vary depending on the precision of spill gate settings, flow variations in real time, varying project head (the elevation difference between a project's forebay and tailwater), automatic load following, and other factors.

#### **Operational Considerations:**

- **Spill levels:** Project spill levels listed in Tables 2 and 3 coincide with specific gate settings in the FPP project spill pattern tables. Due to limits in the precision of spill gates and control devices, short term flow variations, and head changes, it is not always possible to meet the exact spill levels identified in Tables 2 and 3 or in RCC spill requests (teletypes) to specific projects. Therefore, spillway gates are opened to the gate settings identified in the FPP project spill pattern tables to provide spill levels that are the closest to the prescribed FOP spill levels.

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<sup>3</sup> The Camas/Washougal TDG fixed monitoring site is located approximately 24 miles downstream of Bonneville Dam and is used to simulate a forebay gauge for Bonneville Dam.

- Spill percentages: Spill percentages are considered target spill levels. The project control room operator and BPA duty scheduler calculate spill levels to attempt to be within  $\pm 1\%$  of the target percentage for the following hour (or more than  $\pm 1\%$  at The Dalles and Little Goose dams as specified in FPP Sections 3 and 8 spill pattern tables). Prescribed or specified spill percentages in Tables 2 and 3 may not always be attained due to low flow conditions and minimum generation requirements (Table 1), TDG gas cap limitations, temporary spill curtailment for navigation safety, and other unavoidable circumstances. Operators and schedulers review the percentages achieved during the day and adjust spill levels in later hours, with the objective of ending the day with a daily average spill percentage that achieves the specified spill percentage.

### **Minimum Generation**

Both Snake and Columbia River dams have a minimum generation requirement that has been established to maintain power system stability and reliability. The Corps has identified minimum generation powerhouse outflow values derived from actual generation records when turbines were operating within  $\pm 1\%$  of best efficiency (Table 1). Values stated in Table 1 are approximations that account for varying head or other small adjustments in turbine unit operation that may result in variations from the reported minimum generation flow and spill amount. Conditions that may result in minor variations include:

1. Varying pool elevation: as reservoirs fluctuate within the operating range, flow rates through the generating unit change.
2. Generating unit governor "dead band": the governor controls the number of megawatts the unit should generate, but cannot precisely control a unit flow; variations may be 1-2% of unit flow.
3. System disturbances: once a generator is online and connected to the grid, it responds to changes in system voltage and frequency. These changes may cause the unit to increase or decrease flow and generation slightly within an hour. Individual units operate differently from each other and often have unit specific constraints.
4. Generation control systems regulate megawatt (MW) generation only; not flow through individual turbine units.

All of the lower Snake River powerhouses may be required to keep one generating unit on line at all times for power system reliability under low river flow conditions, which may result in a reduction of spill at that project. These projects have two "families" of turbines with slightly different capacities – small and large. In most cases during low flow conditions, one of the smaller turbine units (with reduced generation and flow capabilities) will be online. The smaller turbine units are generally numbered 1–3 and are the first priority for operation during the fish passage season. If smaller turbine units are unavailable, larger units may be used.

During low river flow events, the operating unit generally runs at the lower end of the  $\pm 1\%$  of best efficiency range. At Lower Monumental Dam, however, turbine unit 1 (the first priority unit during fish passage) cannot operate at the low end of the design range because it has welded blades. Ice Harbor turbine units cannot be operated at the lower end of the  $\pm 1\%$  of best efficiency range because these units experience cavitation, which damages the turbine runner and can be detrimental to fish. Therefore, Ice Harbor turbine units will operate at their lower cavitation limits. Minimum generation flow ranges at McNary, John Day, and The Dalles dams are 50-60 kcfs and 30-40 kcfs at Bonneville, as shown in Table 1.

Table 1.— Minimum generation ranges for turbine units at the four lower Snake and four lower Columbia River dams.

<b>Project</b>	<b>Turbine Units</b>	<b>Minimum Generation (kcfs)</b>
Lower Granite	1-3	11.3-13.1
	4-6	13.5-14.5
Little Goose	1-3	11.3-13.1
	4-6	13.5-14.5
Lower Monumental	1	16.5-19.5
	2-3	11.3-13.1
	4-6	13.5-14.5
Ice Harbor	1, 3-6	8.5-10.3
	2	11.3-13.1
McNary	N/A	50-60
John Day	N/A	50-60
The Dalles	N/A	50-60
Bonneville	N/A	30-40

### **Low Flow Operations**

Low flow operations at lower Snake and Columbia River projects are triggered when inflow is not sufficient to meet both minimum generation requirements and planned FOP spill levels listed in Tables 2 and 3. In these situations, Snake River projects will operate one turbine unit at the minimum generation outflow and spill the remainder of inflow at the project. Columbia River projects will also operate at minimum generation and pass the remaining inflow as spill down to minimum spill levels. As river flow transitions from higher flow to low flow, there may be situations when maintaining minimum generation and the target spill identified in Tables 2 and 3 may not be possible every hour, since these projects have limited flexibility. During the transition phase, flow may recede at a higher rate than forecasted and inflow provided by non-Federal projects upstream is often variable and uncertain. The combination of these factors may result in instances where unanticipated changes to inflow cause forebay elevations to go outside of the normal minimum operating pool (MOP) ranges for Snake River projects as provided for in the 2010 Supplemental BiOp.

During low flow conditions when the navigation lock is being emptied at some projects, the total spill volume remains constant, but the spill reported as a percent of total flow may be temporarily reduced below the target spill percentage. This occurs because the volume of water needed to empty the navigation lock during periods of low flow is a greater percentage of the total flow than when river flow is higher.

At Little Goose Dam, when daily average flow in the lower Snake River is  $\leq 32$  kcfs, achieving 30% spill would require switching powerhouse operations between operating two units at the low end of the  $\pm 1\%$  of best efficiency range to operating one unit at the high end of the  $\pm 1\%$  of best efficiency range. This operation, in combination with constant inflow from Lower Granite Dam, often makes it difficult to achieve the FOP prescribed spill level downstream at Lower Monumental Dam and to also maintain MOP operations. In years past, through coordination with TMT during low flow periods, Little Goose spill operations changed from 30% to a constant spill level of approximately 7-11 kcfs to smooth out Little Goose outflow, meet Lower Monumental FOP specified spill levels, and maintain the MOP elevation at Little Goose. A similar operation will be implemented in 2013, if necessary, depending on river flow.

### **Operations during Rapid Load Changes**

Project operations during hours when power system load and/or intermittent generation changes rapidly, may result in not meeting FOP specified hourly spill levels because projects must be available to respond to within-hour load variability to satisfy North American Electric Reliability Council (NERC) reserve requirements (“on response”). This usually occurs at McNary, John Day, and The Dalles dams. In addition to within-hour load variability, projects on response must be able to respond to within hour changes that result from intermittent generation (such as wind generation). During periods of rapidly changing loads and intermittent generation, projects on response may have significant changes in turbine flow within the hour, while the spill quantity remains the same within the hour. Under normal conditions, within-hour load changes occur mostly on hours immediately preceding and after the peak load hours; however, within-hour changes in intermittent generation can occur at any hour of the day. Due to the high variability of within-hour load and intermittent generation, these load swing hours may have a greater instance of reporting actual spill percentages that vary more than the  $\pm 1\%$  requirement in other hours.

### **Turbine Unit Testing around Maintenance Outages**

Turbine units may be operationally tested for up to 30 minutes by running the unit at speed no load and various loads within the 1% of best efficiency range to allow for pre-maintenance measurements and testing, and to allow all fish to move through the unit. Units may be operationally tested after maintenance or repair, but before a unit comes out of a maintenance or forced outage status. This testing may consist of running the unit for up to 30 minutes before it is returned to operational status. Testing of a unit under maintenance is in addition to a unit operating at minimum generation required for power system reliability. Testing may deviate from unit operating priorities specified in FPP sections 2-9 and may use water that would otherwise be used for spill if the running unit

for reliability is at the bottom of the  $\pm 1\%$  of best efficiency range. Water will be used from the powerhouse outflow allocation if possible, and water diverted from spill for operational testing will be minimized. Consistent with the 2011 Court Order and previous years, the Corps will coordinate this testing with the region through the Fish Passage Operations and Maintenance (FPOM) group.

### **Navigation Safety**

Short-term adjustments in spill may be required for navigation safety, primarily at the lower Snake projects, but may also be necessary at the lower Columbia projects. This may include changes in spill patterns, reductions in spill, or short-term spill curtailment. In addition, unsteady flow at Little Goose and Ice Harbor dams during low flow conditions may impact reservoir elevations at those projects and cause inadequate navigation depths at the downstream entrances to the Lower Granite and Lower Monumental navigation locks. Therefore, adjustments to pool elevation in the Little Goose pool and Ice Harbor pool, of up to 1.0 ft. above the MOP operating range may be necessary to accommodate safe entrance to the navigation locks at Lower Granite and Lower Monumental dams during periods of low flow (approximately 50 kcfs or less) and will be coordinated in TMT. These adjustments may be necessary for both commercial tows and fish barges. Additionally, to accommodate safe navigation, the Lower Granite pool will be operated up to MOP+2 ft. depending on river flow, consistent with operations coordinated in 2012<sup>4</sup>.

### **JUVENILE FISH TRANSPORTATION PROGRAM OPERATIONS**

As noted above, the Corps' planned spill operations assume average runoff conditions. In previous years, the FOP provided that spill for fish passage would occur under all flow conditions.<sup>5</sup> To improve survival of juvenile migrants, the 2010 Supplemental BiOp calls for an annual review of the previous year's fish survival information and discussion with the Regional Implementation Oversight Group (RIOG) to inform transport/spill operations for the subsequent year. After considering the best available information and taking into account input from regional sovereigns, the Corps will continue implementation of the 2012 juvenile fish transportation program operations at the Snake River collector projects in 2013. These operations will continue spill levels specified in Tables 2 and 3 independent of flow conditions. River flow and fish condition will be monitored, and if regional sovereigns recommend adjustments in spill and/or transportation operations that differ from those stated herein, the Corps will use the regional coordination process to make a determination on recommended operational changes.

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<sup>4</sup> Flow specific criteria under the variable-MOP operation are as follows: If inflow is  $\geq 120$  kcfs, then operate at 733.0-734.0 ft. (MOP); if inflow is 80-119 kcfs, then operate at 734.0-735.0 ft. (MOP+1); if inflow 50-79 kcfs, then operate at 734.5-735.5 ft. (MOP+1.5); if inflow is  $\leq 49$  kcfs, then operate at 735.0-736.0 ft. (MOP+2).

<sup>5</sup> The 2009 FOP provided: "In exceptionally low water years, when the projected seasonal average flow is less than 70 kcfs, the Corps will begin transportation on April 20 at all three Snake collector projects. Spill for fish passage will occur under all flow conditions."

The following describes the proposed transportation operations for the lower Snake River projects. Detailed descriptions of project and transport facility operations to implement the juvenile fish transportation program are contained in the FPP Appendix B.

### **Lower Snake River Dams - Operation and Timing**

Transportation will be initiated at Lower Granite Dam no earlier than April 20 and no later than May 1. Transportation will start up to 4 days and up to 7 days after the Lower Granite Dam start date at Little Goose and Lower Monumental dams, respectively. The actual start date for Lower Granite, Little Goose, and Lower Monumental dams will be determined through coordination with TMT as informed by the in-season river condition (e.g. river flow and temperature) and the status of the juvenile Chinook and steelhead runs (e.g. percentage of runs having passed the project).

The collection of fish at lower Snake River projects for transportation will commence at 0700 hours on the agreed to start dates. Barging of fish will begin the following day and collected juvenile fish will be transported from each facility on a daily or every-other-day basis (depending on the number of fish) throughout the migration season. Transportation operations will be carried out at each project in accordance with all relevant FPP operating criteria.

Transportation and spill operations may be adjusted due to research, conditions at fish collection facilities such as overcrowding or temperature extremes, through the adaptive management process with FPOM and/or TMT to better match juvenile outmigration timing or achieve/maintain performance standards.

### **McNary Dam - Operation and Timing**

Transportation will be initiated at McNary Dam between July 15–30 per the 2010 Supplemental BiOp (RPA 30, Table 4) and in coordination with NOAA Fisheries and the TMT. Fish will be transported from McNary Dam by barge through August 16, then transported by truck every other day. All fish collected will be transported except those marked for in-river studies. Fish are expected to be transported through September 30. The presence of factors such as excess shad, algae or bryozoans that can clog screens and flumes may result in discontinuing transport operations at McNary Dam before September 30. Detailed criteria for McNary transport are contained in the FPP, Appendix B.

Transportation operations may be adjusted for research purposes, due to conditions at the collection facilities, or as a result of the adaptive management process (to better match juvenile outmigration timing and/or to achieve or maintain performance standards). If new information indicates that modifying (or eliminating) transportation operations at McNary Dam is warranted, adaptive management will be used to make appropriate adjustments through coordination with the FPOM/TMT.

## **SPRING SPILL OPERATIONS**

### **Lower Snake River Projects**

Spring spill will begin on April 3 at Lower Granite, Little Goose, Lower Monumental, and Ice Harbor dams. Spring spill operations will continue through June 20. However, fish run timing and research schedules may require an earlier transition date to summer operations to assure that research occurs during the bulk of the migration. Such changes will be coordinated through the SRWG and TMT. Spring spill levels for Snake River dams are shown in Table 2.

### **Lower Columbia River Projects**

Spring spill will begin April 10 at McNary, John Day, The Dalles, and Bonneville dams. Spring spill operations will continue through June 30 at John Day, and The Dalles dams, through June 19 at McNary Dam, and through June 15 at Bonneville Dam. However, fish run timing and research schedules may require earlier transition dates to summer spill operations to assure that research occurs during the bulk of the migration. Such changes if necessary will be coordinated through the SRWG and TMT. Spring spill operations are shown in Table 2.

## **SUMMER SPILL OPERATIONS**

### **Lower Snake River Projects**

Summer spill will begin on June 21 at Lower Granite, Little Goose, Lower Monumental and Ice Harbor dams and continue through August 31 at all four Snake River projects. Summer spill levels are shown in Table 3.

### **Lower Columbia River Projects**

Summer spill will begin June 16 at Bonneville Dam, June 20 at McNary Dam, and July 1 at John Day and The Dalles dams and continue through August 31 at all four Columbia River projects. Summer spill levels are shown in Table 3.

## **PROJECT BY PROJECT OPERATIONS**

The following sections describe 2013 spill operations for each project. Included in the descriptions are planned research activities identified in the 2010 Supplemental BiOp. The Corps, regional fishery agencies, and Tribes are interested in the continuation of project research studies under the Corps' Anadromous Fish Evaluation Program (AFEP). These studies have been evaluated through the annual AFEP review process with the regional fishery agencies and Tribes, with the study designs being finalized prior to initiation in 2013. The studies are intended to provide further information on project survival that will help inform the region in making decisions on future operation and

configuration actions to improve fish passage and survival and meet BiOp performance standards at the lower Snake and Columbia River dams.

Table 2.— Summary of 2013 spring spill levels at lower Snake and Columbia River projects.<sup>6</sup>

<b>Project</b>	<b>Planned 2013 Spring Spill Operations (Day/Night)</b>	<b>Comments</b>
Lower Granite	20 kcfs/20 kcfs	Same as 2012
Little Goose	30%/30%	Same as 2012
Lower Monumental	Gas Cap/Gas Cap (approximate Gas Cap range: 20-29 kcfs)	Same as 2012
Ice Harbor	<b>April 3-April 28:</b> 45 kcfs/Gas Cap <b>April 28-June 20:</b> 30%/30% vs. 45 kcfs/Gas Cap (approximate Gas Cap range: 75-95 kcfs)	Same as 2012
McNary	40%/40%	Same as 2012
John Day	<b>Pre-test:</b> 30%/30% <b>Testing:</b> 30%/30% and 40%/40%	Same as 2012
The Dalles	40%/40%	Same as 2012
Bonneville	100 kcfs/100 kcfs	Same as 2012

<sup>6</sup> Table 2 summarizes the planned spring spill operations. More specific detail governing project operations is included in project specific sections.

Table 3.— Summary of 2013 summer spill levels at lower Snake and Columbia River projects.<sup>7</sup>

<b>Project</b>	<b>Planned 2013 Summer Spill Operations (Day/Night)</b>	<b>Comments</b>
Lower Granite	18 kcfs/18 kcfs	Same as 2012
Little Goose	30%/30%	Same as 2012
Lower Monumental	17 kcfs/17 kcfs	Same as 2012
Ice Harbor	<b>June 21-July 13:</b> 30%/30% vs. 45 kcfs/Gas Cap <b>July 13-August 31:</b> 45 kcfs/Gas Cap (approximate Gas Cap range: 75-95 kcfs)	Same as 2012
McNary	50%/50%	Same as 2012
John Day	<b>July 1-July 20:</b> 30%/30% and 40%/40% <b>July 20-August 31:</b> 30%/30%	Same as 2012
The Dalles	40%/40%	Same as 2012
Bonneville	<b>June 16-July 20:</b> 85 kcfs/121 kcfs and 95 kcfs/95 kcfs <b>July 21-August 31:</b> 75 kcfs/Gas Cap	Same as 2012

### Lower Granite

**Spring Spill Operations April 3 through June 20:** 20 kcfs 24 hours per day.

**Summer Spill Operations June 21 through August 31:** 18 kcfs 24 hours per day.

#### **Changes in Operations for Research Purposes:**

- Research operations: There are no special spill operations for research planned in 2013. Established spill patterns as described in FPP Section 9 will be used.

#### **Operational Considerations:**

- Lack of power load or unexpected unit outages could cause involuntary spill at higher total river flow that could result in exceeding the gas cap limits.
- During periods of high spring runoff when involuntary spill occurs, there may be periods where spill levels create unsafe hydraulic conditions for commercial, non-commercial, and fish transportation barges entering and exiting the tailrace and/or while moored at the fish loading facility. If such runoff conditions occur, spill may be reduced temporarily when fish transport barges approach or leave the barge

<sup>7</sup> Table 3 summarizes the planned summer spill operations. More specific detail governing project operations is included in project specific sections.

docking area or are moored at loading facilities. If conditions warrant a spill reduction for any navigational passage, Lower Granite pool MOP elevation restrictions may be temporarily exceeded until the barge/vessel exits the tailrace safely and spill resumes.

- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Maintenance dates are subject to change.
- ADCP surveys to determine tailrace hydraulic parameters for design of the Lower Granite Dam juvenile outfall pipe may require two periods of no spill during the day. Additional details on the operation may be found in FPP Appendix A.

### **Little Goose**

**Spring Spill Operations April 3 through June 20:** 30% spill 24 hours per day. The spillway weir closure gate will be raised as soon after 0630 hours on April 3 as weather permits.

**Summer Spill Operations June 21 through August 31:** 30% spill 24 hours per day.

#### **Changes in Operations for Research Purposes:**

- Research operations: Performance standard testing at 30% spill is planned to occur in summer 2013 at Little Goose Dam. Testing will begin in June and continue through mid-July. The dates of testing will be dependent on the size and availability of fish for tagging. Final dates for testing will be coordinated through the Studies Review Workgroup (SRWG). Established spill patterns as described in FPP Section 8 will be used.
- Objectives of the biological test: The objectives of the test are to assess passage distribution and efficiency metrics, forebay retention and tailrace egress times, and dam survival for subyearling Chinook to determine if juvenile dam survival at 30% spill under the current project configuration meets or exceeds the juvenile dam survival performance standard for summer (93%) migrants specified in the 2010 Supplemental BiOp.

#### **Operational Considerations:**

- Daily average flows in the lower Snake River of  $\leq 32$  kcfs can result in incompatible operations with Lower Monumental Dam and cause spill quantity fluctuations. Alternative Little Goose operations to resolve this issue are described in the Low Flow Operations section above and will be coordinated through the FPOM/TMT.
- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Maintenance dates are subject to change.
- Turbine Unit 1 Operation: Operating range will be set within the GDACS program for Little Goose Dam to restrict Turbine Unit 1 operation to approximately the upper 25% of the 1% of best efficiency range (about 16-17.5 kcfs). This will ensure a strong current along the south shore to counter the strong eddy that forms in the tailrace during certain spill conditions. A strong south shore current in the tailrace is

important for both adult fish passage and juvenile fish egress. If low flow conditions occur in the spring, the full  $\pm 1\%$  of best efficiency range will be restored to minimize impacts on spill levels.

### **Lower Monumental**

**Spring Spill Operations April 3 through approximately June 20:** Spill to the 115/120% TDG gas cap 24 hours per day using the bulk spill pattern (see Operational Considerations).

**Summer Spill Operations Approximately June 21 through August 31:** 17 kcfs 24 hours per day.

#### **Changes in Operations for Research Purposes:**

- Research operations: Performance standard testing at 17 kcfs (summer) spill is planned to occur in 2013 at Lower Monumental Dam. Testing will begin in June and continue through mid-July. The dates of testing will be dependent on subyearling Chinook run timing and the size and availability of fish for tagging. Final dates for testing will be coordinated through the SRWG.
- Objectives of the biological test: The objectives of the test are to assess passage distribution and efficiency metrics, forebay retention and tailrace egress times, and dam survival for subyearling Chinook to determine if juvenile dam survival at 17 kcfs (summer) spill under the current project configuration meets or exceeds the juvenile dam survival performance standard for summer (93%) migrants specified in the 2010 Supplemental BiOp.

#### **Operational Considerations:**

- Consistent with adjustments made in 2012 spring operations through regional coordination, when total river flow is likely to exceed turbine capacity and spill over the 120% TDG gas cap (occurs at a total river flow of  $\sim 140$  kcfs) for three or more days, the project will use the uniform spill pattern. This may also occur if spill over the 120% TDG gas cap is required due to “lack of demand” spill at any river flow level.
- Daily average flows of  $\leq 32$  kcfs can result in incompatible operations with Little Goose Dam and may cause spill quantity fluctuations.
- Transit of the juvenile fish barge across the Lower Monumental tailrace, then docking at and departing from the fish collection facility, may require spill level to be reduced due to safety concerns. The towboat captain may request that spill level be reduced or eliminated during transit. During juvenile fish loading operations, spill is typically reduced to 15 kcfs, but can be reduced further if necessary for safety reasons. Barge loading duration can be up to 3.5 hours. Because of the time needed to complete loading at Lower Monumental, the Little Goose Project personnel will notify the Lower Monumental personnel when the fish barge departs from Little Goose. This ensures that BPA scheduling is provided advance notice for spill control at Lower

Monumental Dam. Reducing spill may cause the Lower Monumental pool to briefly operate outside of MOP elevations.

- Operating units within the 1% of best efficiency range translates to as much as 19 kcfs discharge for each of the 6 turbine units, for a maximum hydraulic capacity of approximately 114 kcfs. The expected spill cap is roughly 27 kcfs (but varies depending on total river flow). Therefore, if total river flow is greater than 141 kcfs the gas cap will be exceeded. Either lack of power load or unit outages can also cause forced spill above spill cap limits at higher total river flow.
- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Maintenance dates are subject to change.

### **Ice Harbor**

**Spring Spill Operations April 3 through June 20:** Spill will begin at 45 kcfs day/spill cap night on April 3 and continue until April 28. On April 28, spill will alternate between 45 kcfs day/spill cap night and 30% /30% with the SW operating and continue through the spring season. Nighttime spill hours are 1800–0500.

**Summer Spill Operations June 21 through August 31:** Spill operations will continue from spring at 30% 24 hours per day vs. 45 kcfs day/Gas Cap night until July 13 at 0500 hours, then 45 kcfs day/Gas Cap night through August 31.

### **Changes in Operations for Research Purposes:**

- Research operations: There are no special spill operations for research planned in 2013. Spill patterns as described in FPP Section 6 will be used.

### **Operational Considerations:**

- Spill operation treatments may be rearranged within a week throughout the season. If rearrangement of treatments occurs, the total number of each spill level treatment for the spring season will not change. The flexibility to rearrange treatments during periods of higher power demand may alleviate the need to declare a power emergency.
- Powerhouse capacity at Ice Harbor is approximately 94 kcfs with all 6 units operating within the 1% of best efficiency range, while spill cap rates are about 100 kcfs. If total river flow exceeds about 194 kcfs, TDG levels may exceed the water quality standards set by the States of Oregon and Washington.
- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Dates are subject to change.
- Submersible Traveling Screens (STs) will be installed by April 1. The normal juvenile bypass operation will be to route fish through the full flow bypass pipe, which has interrogation capability to monitor for PIT tags. From April 1 through July 31, juvenile fish will be sampled every 3 to 5 days to monitor fish condition and then bypassed to the river. Sampling activity may be terminated early should juvenile bypass fish numbers drop to the point where valid sampling is no longer feasible (100

fish of the most dominant species present are needed to properly assess fish condition). Sampling may also cease if the cumulative number of fish sampled for the season reach the permitted maximum.

### **McNary**

**Spring Spill Operations April 10 through approximately June 19:** 40% spill 24 hours per day with the two spillway weirs operating. A spillway weir will be operated in both spillbay 19 and spillbay 20 for the period April 10 through June 6. As in past years, both spillbay weirs will be removed from service by June 8 (or next business day as coordinated through the FPOM) for the benefit of subyearling Chinook. This operational change will be coordinated through the Fish Facility Design Review Workgroup (FFDRWG), FPOM, the Tribes, and NOAA. Temporary spill pattern changes to allow removal of the spillway weirs will occur, however spill will continue at 40% during the spillway weir removal process using the spill pattern identified in FPP Table MCN-10. Following removal of the spillway weirs, the spill pattern contained in Table MCN-9 in FPP section 5 will be used for the remainder of the spring.

**Summer Spill Operations June 20 through August 31:** 50% spill 24 hours per day without spillway weirs.

#### **Changes in Operations for Research Purposes:**

- Research operations: There are no special spill operations for research planned in 2013. Established spill patterns as described in FPP Section 5 will be used.

#### **Operational Considerations:**

- Juvenile fish collected at McNary during the spring FOP implementation period will be bypassed to the river. The normal operation will be to bypass fish through the full flow bypass pipe, which has interrogation capability to monitor for PIT tags. Every other day, however, in order to sample fish for the Smolt Monitoring Program, fish will be routed through the separator, interrogated for PIT tags, and then bypassed to the river.
- All extended-length submersible bar screens (ESBSs) at McNary will be installed by April 15 as agreed to in consultation with FPOM, the Tribes, and NOAA. This is part of the Corps' consideration of lifting (or waiting to install) some turbine intake screens during periods of significant juvenile lamprey passage. Effects to both salmon and lamprey have been considered. Although there are some adverse impacts to migrating salmon from this delay in screen installation, regional sovereigns have considered this acceptable in balancing the needs of multiple species.
- Spill will be curtailed as needed to allow safe operation of fish transportation barges near collection facilities downstream of the project.
- During the periods when total river flow exceeds approximately 320 kcfs, involuntary spill in excess of the States' TDG limits for fish passage may occur.

- In addition, low power demand may also necessitate involuntary spill at total river flow of less than 320 kcfs.
- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Dates are subject to change.

### John Day

**Spring Spill Operations April 10 through June 30:** 30% spill 24 hours per day will begin on April 10 and continue until the alternating two-treatment operation begins on approximately April 27. During the two-treatment operation, spill 30% and 40% 24 hours per day for the remainder of spring. Spill levels will alternate between 30% and 40% spill in 4-day blocks with two-day treatments. Spill level changes will occur at 2000 hours.

**Summer Spill Operations July 1 through August 31:** Spill operations will continue from spring at 30% and 40% spill 24 hours per day and continue through approximately July 20. Spill levels will alternate in a four-day block with two-day treatments (30% or 40% spill). Spill treatment changes will occur at 2000 hours. A single-treatment operation of 30% spill 24 hours per day will begin approximately July 20 and continue through August 31.

#### **Changes in Operations for Research Purposes:**

- Research operations: There are no special spill operations for research planned in 2013. Established spill patterns as described in FPP Section 4 will be used.

#### **Operational Considerations:**

- Spill operation treatments may be rearranged within a week throughout the season. If rearrangement of treatment occurs, the total number of each spill level treatment for the spring season will not change. The flexibility to rearrange treatments during periods of higher power demand may alleviate the need to declare a power emergency.
- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Maintenance dates are subject to change.
- Unit outages and spillway outages may also be required to repair hydrophones and other research equipment. These will be coordinated through FPOM and TMT as needed.

### The Dalles

**Spring Spill Operations April 10 through June 30:** 40% spill 24 hours per day.

**Summer Spill Operations July 1 through August 31:** 40% spill 24 hours per day.

### **Changes in Operations for Research Purposes:**

- Research operations: There are no special spill operations for research planned in 2013. Established spill patterns as described in FPP Section 3 will be used.

### **Operational Considerations:**

- If total river flow is between 92 and 160 kcfs, the spill percentage could range from 38.6 to 41.4 percent.
- At no time is spill recommended on the south side of the spillway (Bays 9-23) as this creates a poor tailrace egress condition for spillway-passed fish.
- Spill bays 9, 10, 11, 13, 16, 18, 19, and 23 are operationally restricted due to wire rope, structural, and concrete erosion concerns.
- The spill pattern in the FPP is based on a nominal forebay elevation at The Dalles Dam of 158.5 feet.
- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Maintenance dates are subject to change.

## **Bonneville**

**Spring Spill Operations April 10 through June 15:** 100 kcfs spill 24 hours per day.

**Summer Spill Operations June 16 through August 31:** Summer spill operations will alternate every two days between 85 kcfs/121 kcfs and 95 kcfs 24 hours per day. The alternating operation will begin at 0430 hours approximately June 16 and continue through July 20. Spill changes will occur according the daytime spill schedule contained in Table BON-5 in FPP section 2. Spill at 85 kcfs/121 kcfs and/or 95kcfs/95 kcfs will be unconstrained by the Camas/Washougal fixed monitoring TDG station. Following the alternating spill operation, a 75 kcfs/Gas Cap operation (managed using the Camas/Washougal fixed monitoring TDG station) will begin on July 21 and continue through August 31.

### **Changes in Operations for Research Purposes:**

- Research operations: There are no special spill operations for research planned in 2013. Established spill patterns as described in FPP Section 2 will be used.

### **Operational Considerations:**

- Minimum spill level is 50 kcfs; however, as in past years, under extreme low flow conditions lower spill levels may be considered and coordinated through the TMT. This is to provide acceptable juvenile fish egress conditions in the tailrace.
- During spring, at a total river flow of less than about 135 kcfs, spill will be less than 100 kcfs to maintain minimum powerhouse generation of 30 kcfs plus fish ladder and facility spill (e.g. second powerhouse corner collector, first powerhouse sluiceway).

- The TMT will consider the possible effects of TDG on emerging chum salmon downstream of Bonneville Dam. The TMT may request special operations such as flow increases or spill reductions to protect ESA-listed fish.
- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Maintenance dates are subject to change.
- Actual spill levels at Bonneville Dam may range from up to 3 kcfs lower or higher than specified in Table 2. A number of factors influence this including hydraulic efficiency, exact gate opening calibration, spillway gate hoist cable stretch due to temperature changes, and forebay elevation (a higher forebay results in a greater volume of spill since more water can pass under the spill gate).
- The second powerhouse Corner Collector (5 kcfs flow) will operate from the morning of April 10 through the remainder of the spill season as coordinated through the FPOM.
- High river flow and excessive debris load at the second powerhouse may require removal of submersible traveling screens (STSs) and vertical barrier screens (VBSs) according to criteria described in FPP Section 2 in coordination with the FPOM.

## **TRANSPORT AND LATENT MORTALITY RESEARCH**

### **Seasonal Effects of Transport**

A study will be conducted to determine seasonal effects of transporting fish from the Snake River to optimize a transportation strategy. At Lower Granite, fish will be collected for this study starting on April 17, with marking beginning on April 18. Depending on the number of fish available, fish will be collected 1-2 days with tagging occurring on the day following collection. A barge will leave each Thursday morning with all fish collected during the previous 1-3 days. By barging all fish (minus the in-river group) during 1 to 3 days of collection, barge densities will be maintained at a level similar to what would occur under normal transport operations that time of year. This pattern will occur in the weeks preceding general transportation and will be incorporated into general transportation once that operation begins. The desired transported sample size is 6,000 wild Chinook and 4,000 - 6,000 wild steelhead weekly for approximately eight weeks.

## **EMERGENCY PROTOCOLS**

The Corps and the Bureau of Reclamation will operate the projects in emergency situations in accordance with the WMP Emergency Protocol (WMP Appendix 1). This protocol identifies the process the Action Agencies will use in the event of an emergency concerning the operation of FCRPS that impacts planned fish protection measures. The most recent version of the Emergency Protocols is located at:

<http://www.nwd-wc.usace.army.mil/tmt/documents/wmp/2013/final/emerproto>

## **COORDINATION**

To make adjustments in response to changes in conditions, the Corps will utilize the existing regional coordination committees. Changes in spill levels when flow conditions are higher or lower than anticipated will be coordinated through the TMT. This could include potential issues and adjustments to the juvenile fish transportation program. Spill patterns and biological testing protocols that have not been coordinated to date will be finalized through the Corps' AFEP subcommittees, which include the SRWG, FFDRWG, and FPOM.

## **REPORTING**

The Corps will provide periodic in-season updates to TMT members on the implementation of 2013 fish passage operations. The updates will include the following information:

- the hourly flow through the powerhouse;
- the hourly flow over the spillway compared to the spill target for that hour; and,
- the resultant 12-hour average TDG for the tailwater at each project and for the next project's forebay downstream.

The updates will also provide information on substantial issues that arise as a result of the spill program (e.g. Little Goose adult passage issues in 2005 and 2007), and will address any emergency situations that arise.

The Corps will continue to provide the following data to the public regarding project flow, spill rate, TDG level, and water temperature.

- Flow and spill quantity data for the lower Snake and Columbia River dams are posted to the following website every hour: <http://www.nwd-wc.usace.army.mil/report/projdata.htm>
- Water Quality: TDG and water temperature data are posted to the following website every hour: <http://www.nwd-wc.usace.army.mil/report/total.html>. These data are received via satellite from fixed monitoring sites in the Columbia and Snake rivers every hour, and placed on a Corps public website upon receipt. Using the hourly TDG readings for each station in the lower Snake and Columbia rivers, the Corps will calculate both the highest and highest consecutive 12-hour average TDG levels daily for each station. These averages are reported at: [http://www.nwd-wc.usace.army.mil/ftppub/water\\_quality/12hr/](http://www.nwd-wc.usace.army.mil/ftppub/water_quality/12hr/)

## **SYSTEM OPERATIONAL REQUEST: 2013-01**

**TO:** BG Anthony C. Funkhouser  
Colonel Bruce A. Estok  
Jim Barton  
Doug Baus  
Bill Proctor  
David Combs  
Gayle Lear  
J. William McDonald  
William Drummond  
Steve Oliver

COE-NWD-Commander  
COE-NWS-Commander  
COE-NWD-Columbia Basin Water Management  
COE-NWD-RCC  
COE-NWD-RCC  
COE-NWD-PDD  
COE-NWD-Counsel  
USBR-Boise Regional Director  
BPA-Administrator  
BPA-PG-5

**FROM:** Kootenai Tribe of Idaho; Sue Ireland, Fish and Wildlife Department Director

**DATE:** April 03, 2013

**SUBJECT:** September / October 2013 Libby Dam Outflow for Kootenai River Habitat Restoration Project, Phase 2, Braided Reach

### **SPECIFICATIONS:**

Release 8,000 cfs or less from Libby Dam during September and October, 2013.

Provide gradually declining discharge to the target flows following ramping rate guidelines in the 2006 USFWS BiOp for bull trout and white sturgeon.

### **JUSTIFICATION:**

Low flows in the Kootenai River in September and October are requested to allow the Kootenai Tribe of Idaho's contractor to de-water two areas (channels) located in the Kootenai River Habitat Restoration Project, Phase 2, Braided Reach 2 project area. The restoration strategy for this portion of the project is to stabilize eroding banks, trap sediment and promote floodplain development, increase riparian vegetation, create pools and increase channel margin and side channel complexity. The Middle Meander project will result in restoration of approximately 2,700 feet of river bank and will substantially reduce sediment loading that is contributing to degraded habitat conditions downstream. The 1A Extension project will address degraded habitat conditions in 900 feet of side channel.

The proposed operation will ensure Action Agency compliance with the USFWS Biological Opinion regarding the Effects of Libby Dam Operations on the Kootenai River White Sturgeon, Bull Trout, and Kootenai Sturgeon Critical Habitat (1901F0279R) as clarified (2008). Action 2.1 under RPA Component 2 (Management of Sturgeon Habitat) calls for Action Agency cooperation in implementing the Kootenai Tribe of Idaho's Kootenai River Restoration Project Master Plan.

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemmer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

Wednesday April 3, 2013 9:00am - 12:00pm

1125 N.W. Couch Street, Suite 500, Columbia Room  
Portland, Oregon 97209-4142  
Map Quest [\[Directions\]](#)

**TMT MEETING**  
Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 0961

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnmw.net](mailto:rgumpert@cnmw.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

## AGENDA

1. Welcome and Introductions
2. Review March 27 Meeting Minutes
3. Dworshak Operations - Karl Kanbergs, COE-NWD and Steve Hall, COE-NWW
  - a. [DWR Regulation to Fill](#)
4. Kootenai SOR - Sue Ireland, Kootenai Tribe and Joel Fenolio, COE-NWS
  - a. [SOR](#)
5. Spring Creek - David Wills, USFWS
6. Chum Update - Paul Wagner, NOAA Fisheries and Doug Baus, COE-NWD

7. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
8. Other
  - a. Set agenda and date for next meeting - **April 10, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Doug Baus](#) at (503) 808-3995*

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

April 3, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### Review Meeting Minutes

The March 27 meeting Official Minutes and Facilitator's Notes were reviewed and approved with no edits.

### Dworshak Operations

Karl Kanbergs, Division Corps, explained that the Division and Walla Walla District Corps are working on an improved forecast for Dworshak, the '2011 PCA', and had planned to roll it out to the region for implementation next year. However, Walla Walla District saw an opportunity this year to implement the new forecast which would have an impact on this year's spring flow operations. Given that impact, the Corps wanted to present the potential operational scenarios and get feedback from TMT.

Steve Hall, Walla Walla District Corps, presented four slides depicting an operation using 2004 inflows and the current, 2005 PCA forecast (slide 1); and various inflows using the new proposed, 2011 PCA forecast (slides 2-4). He said that the difference in flows between the two forecasts is about 300 kaf; and the end of April target elevation would shift from 1563 feet (current, 2005 forecast) to 1548 feet (new proposed, 2011 forecast). This shift in forecast methodology would prompt a change in operations. Steve also explained that the new forecast was presented to the Columbia River Forecast group and has undergone peer review and has received general support at this point. He walked the group through the slides and fielded questions from TMT:

- Did you factor in Clearwater/Lower Granite flow impacts? Response: The change would be 'fairly innocuous'; inflows will decrease in mid-May based on when the flood control curve is intercepted, and this is dependent on runoff and precipitation inflows. We would work with TMT on specifics of making the change as we go through the season.
- Could you time this operation to align with steelhead peak passage at Lower Granite? Response: April is a flood control operation, not a fish operation so there would not be a lot of flexibility.
- The Corps is managing to system flood control. How does this relate to real local flood control needs and risks? Response: We need to manage to the worst case scenario; and; we do have flexibility to respond to local needs and conditions through our project deviation requests. (Tony Norris, BPA, added that the operation is also managed to TDG.)

After a brief caucus, the salmon managers responded to the Corps' request for feedback. Paul Wagner said that because water supply forecasts are generally below average at this time, they would like to shape Dworshak flows to the extent possible to meet fish needs – and the scenario depicted in Slide 1 using the 2005 PCA forecast seems to be the closest to doing that. The salmon managers are interested in matching the flows with the fish, so less now and more later. They want to watch the situation closely and make adaptive management decisions along the way based on weather, runoff, water supply and fish passage data.

**Action/Next Steps:** The Corps will take the feedback from TMT under consideration and make a decision about how to proceed. They will share back with TMT the decision and this item will be on the agenda for next week's conference call (4/10).

Also, once a final decision is made about using the new 2011 PCA forecast is made, the Corps will share a presentation to TMT about the differences in methodology and analysis that led to the decision to switch to this new forecast methodology. It is anticipated this presentation will be brought to TMT this Summer.

### **Kootenai SOR**

Sue Ireland, Kootenai Tribe, and Joel Fenolio, Seattle District Corps, described the SOR which asks for operations at Libby to support ongoing restoration work on the Kootenai River. Sue said this year there will be work on a middle meander project and an extension of the 2011 project. Joel said the request calls for 8 kcfs maximum outflows in September; and 4 kcfs in October. The Corps would still operate toward a 2449 foot elevation target by the end of September, and would use some flexibility in August (targeting a range of 2449-2451.6 feet end of August) to support the work while meeting BiOp requirements. If the elevation at Libby Dam is greater than 2449 ft then releases will be held at 8 kcfs until 2449 ft is reached or the end of September. The Corps will not double peak releases to meet any of the elevation targets should unexpected precipitation occur. Sue added that projects are planned out for the next couple years.

TMT members were polled on their level of support for implementing the SOR:

- Oregon – no objection
- Montana – approve
- Washington – support
- Idaho – no objection
- USFWS – support
- NOAA – support
- Nez Perce Tribe – no objection

- Umatilla (CTUIR) – no objection
- Colville Tribes – Not available during polling
- Reclamation – support
- BPA – support
- Corps – support

Action/Planned Operation: Given the consensus from TMT, the Corps plans to implement the operation as described above, and will coordinate in season on specifics to meet the targeted flows requested by the Kootenai Tribe.

### **Spring Creek Hatchery Release Update**

Dave Wills, USFWS, reported that plans are underway to release Spring Creek hatchery fish on 4/11 and 5/2. The Service is coordinating with the Corps and through an FPOM work group to set up an operation at Bonneville this year that is similar to last year. Targeting 14 kcfs flows and minimizing descaling impacts by releasing the water first through Bonneville PH2 to the mid to lower point of 25%; then limiting flows through PH1 as needed up to 1%; and then back to PH2 as needed to get the full 14 kcfs out.

Action/Planned Operation: The action agencies planned to implement the coordinated operation starting on 4/12 at 9:00 am for 5 days as a hard constraint; and 5 more days as a soft constraint as needed to support passage of the first release. Specifically, the action agencies will operate PH1 and PH2 in the following order as additional generation is needed.

- 1) Operating PH2 units at the mid-point of the 1% peak efficiency range, with a range of 13 and 15 kcfs, targeting 14 kcfs.
- 2) If additional generation is need then operate PH1 units within the 1% operating range,
- 3) If additional generation is needed then operate PH1 units above the upper 1% limit up to the best operating point (BOP),
- 4) If additional generation is needed then operate PH2 units within the full 1% operating range.

Dave will coordinate with the Corps and the BON project in real time to ensure a smooth operation. He said the first release will include 6.4 million fish, and the second release in May will include 4.7 million fish.

### **Chum Operations Update**

Paul Wagner, NOAA, said that he checked with WDFW on the status of Hamilton Springs (which is similar to Ives Island) and the report is they are nearing the peak of the migration. As such, the salmon

managers requested a continuation of the 11.8 feet minimum tailwater elevation at Bonneville until the start of spring spill on the Columbia on 4/10 – there is no longer a need for re-wetting at the project.

**Action/Planned Operation:** Doug Baus said the Corps will continue to implement the minimum 11.8 foot tailwater at Bonneville through midnight on 4/9.

### **Operations Review**

**Reservoirs** – John Roache, Reclamation, reported on projects: Hungry Horse was at elevation 3536.4 feet, with 3.5 kcfs outflows. The April end of month flood control elevation is 3533.1 feet, which may change with the April final forecast. Hungry Horse is forecasted to be close to that elevation. Grand Coulee was at elevation 1281.8 feet and operating to meet chum, Vernita Bar and a 4/10 elevation objective of 1279.9 feet (which again might change with the April final forecast). Tony Norris, BPA, asked the salmon managers, given the low water supply forecast, to suggest a flow target at Priest Rapids if 135 kcfs cannot be achieved. Paul Wagner, NOAA, said for the next week, not dropping below 100 kcfs would be fine. TMT will revisit this issue during next week’s call.

Lisa Wright, Corps, reported on projects: Libby was at elevation 2394.4 feet with 5.9 kcfs inflows and 4.0 kcfs outflows. Albeni Falls was at elevation 2055.6 feet, with 23.7 kcfs inflows and 19.2 kcfs outflows. Dworshak was at elevation 1561.3 feet, with 9.9 kcfs inflows and 9.9 kcfs outflows. Lower Granite day average inflows were 54.6 kcfs; at McNary, 158.6; and at Bonneville, 176.1 kcfs. Spring spill began on the Lower Snake projects today. As coordinated at FPOM a velocity test required for the installation of the new juvenile bypass outfall pipe will be conducted at Lower Granite at 55 kcfs for 6-10 hours starting tomorrow. In order to provide the required hydraulic conditions for the test LWG may operate outside of MOP for a short period of time. . Columbia projects will begin spill on 4/10.

**Fish** – Paul Wagner, NOAA, reported on adults: 402 Spring Chinook have been counted at Bonneville, and no lamprey at this point. Paul also reported on juveniles: yearling Chinook counts at Lower Granite were 5,580; steelhead counts were 480 at Lower Granite. Lamprey counts were about 10 at Lower Granite.

**Water Quality** – Scott English, Corps, reported that the spill priority list is being implemented; fixed monitoring stations are up and running; the Corps is coordinating with NOAA on daily spill targets; and the TDG waiver began on 4/1.

**Power System** – Nothing to report.

**Announcement:** Rick Kruger, Oregon, announced that he will be retiring at the end of May and said he will continue to serve on TMT until that time. His replacement for TMT has not yet been identified. Rick was thanked for his service and wished well by the team!

### **Next Meeting, 4/10 Conference Call**

Agenda items include:

- April final WSF
- Dworshak Operations
- Priest Rapids Flows
- Vernita Bar Update
- Finalize TMT Guidelines

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

**April 3, 2013**

Notes: Pat Vivian

#### ***1. Introduction***

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of the Nez Perce Tribe, BPA, Washington, COE, NOAA, Montana, Oregon, USFWS, Colville Tribe, BOR, CRITFC/Umatilla, Idaho, Kootenai Tribe and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### ***2. Review of Meeting Minutes – March 27, 2013***

There were no comments on either the official minutes or facilitator's notes for this meeting. The minutes and notes can be considered final unless future concerns are raised.

#### ***3. Proposed Change in Dworshak Operations***

Karl Kanbergs and Steve Hall presented a new COE proposal for managing flows at Dworshak Dam starting in April. The COE has been developing an improved water supply forecasting process for Dworshak, which is called the 2011 PCA forecast. The new process appears to be more accurate in making short, medium and long term projections than the current official forecast, which is called the 2005 PCA forecast.

The COE had initially planned to implement the 2011 PCA forecasting method next year after presenting it to TMT later this year. However, the Walla Walla office would like to implement it now in light of current conditions if TMT approves the water operation that would result from early implementation.

Hall gave a presentation, linked to today's agenda, that illustrates the proposed change in Dworshak operations. The four slides provide comparisons between the official 2005 PCA forecast and the 2011 PCA forecast as applied to two sets of inflows, 2004 inflows and STP inflows for 2013. Hall chose 2004 as a surrogate year because of a similar volume to 2013 and potentially similar flow shapes going out into the spring.

Slides 1 and 2 compare what the Dworshak operation would have been using the 2004 analog inflow if the official 2005 PCA forecast (slide 1) or the 2011 PCA forecast (slide 2) were used. The official forecast would result in water releases of 1.3 MAF compared to releases of just over 2 MAF for the 2011 PCA forecast. Applying the 2011 PCA forecast at this point in the water year would mean storing 300 KAF less volume in DWR reservoir by the end of June. This disparity would put the reservoir to a lower elevation using the 2011 forecast.

Translating to outflow, the potential change to the operation, based on using the updated forecasting methodology means Dworshak would release about 15 kcfs or to the gas cap for the rest of April, with projected releases intercepting the flood control refill curve around April 26. At that point, in order to avoid refilling too soon Dworshak would drop to minimum discharges of about 2 kcfs for the first half of May before ramping up flows for refill control and beneficial fish flows.

Slides 3 and 4 compare the 2011 and 2005 PCA forecast produced operations using STP inflows through the end of June. Slide 3, showing the forecast resulting operations, shows the refill curve intercepted on about the same date as Slide 2, April 26, but calls for holding minimum flows longer before finishing refill. Slide 4, with the 2005 PCA forecast resulting operations, shows that the refill curve wouldn't be intercepted until about May 10. As a result, discharges would remain in the 10-12 kcfs range until May 10, then drop to about 2 kcfs for the rest of May. The COE believes that this PCA forecast procedure is more accurate, given indications that runoff might increase to 2.3 MAF instead of the currently projected 2 MAF. However, implementing the operation depicted in Slide 3 using the 2011 PCA forecast and STP inflows would result in greater discharges during April due to flood control requirements. The Corps noted that had the new forecast been used from the beginning of the season, the project would be drafted deeper by now with the net effect in late April/May essentially the same.

Steve Hall noted that slide 2 (2011 PCA and 2004 inflows) depicts the COE's preferred operation because it is based on an improved forecast and therefore seems the most likely scenario. Hall said that the use of 2004 as a surrogate year probably produces a more realistic scenario than use of STP flows, which depict only historic averages. The current 10-day STP forecast indicates there will be a warming trend followed by rain, with a corresponding rise in flows on the Snake River. The COE asked TMT for questions and feedback on the proposed change in Dworshak operations shown in slide 2.

Dave Statler, Nez Perce, asked how the operation would affect stage levels in the lower Clearwater around May 10. Hall said the difference would be between average discharges of 11 kcfs and 14.5 kcfs, which should not affect stages in the lower Clearwater River, since natural flows should be coming up at that time. The actual Dworshak operation would depend on when outflows intercept the flood control refill curve, which would unavoidably reduce stages on the lower Clearwater. In order to maintain 95% confidence of reservoir refill as required by the BiOp, the COE must reduce flows once the refill curve is intercepted. Statler commented that his main concern is avoiding the kind of abrupt changes in reservoir elevations that have caused habitat problems in Montana reservoirs.

Charles Morrill, Washington, requested that some of the April volume be moved to April 15 or later to accommodate migration at Lower Granite and on the Snake River, where the 10% passage date occurs around April 25-26. It is possible to have damaging inflows even in a low water year, as was the case last year in the Boise system, Hall

replied. Tony Norris, BPA, added that the Dworshak operations not only protect against flooding but potential spill above the gas standard, which is more likely. Because it assumes different inflow volumes, the proposed operation could ultimately lead to increased flows from Dworshak reservoir.

Paul Wagner said NOAA would prefer the operation resulting from using the 2005 PCA forecast. The RFC forecast for the Snake is only about 80% of average for 2013, meaning it will be important this year to shape any available water from Dworshak for the best possible benefit of fish migration. Jim Litchfield, Montana, said changing Dworshak operations based on the new forecast would result in a lower elevation at end April, leaving less water available in May when most fish are migrating.

The Salmon Managers held a caucus on the proposed Dworshak operation alternatives. Their unanimous response was to ask the Action Agencies to stay with an operation that will produce the shallower draft to aid migration per NOAA's recommendation. They added that the preferred operation for fish is to shift water forward to the extent possible, with frequent check-ins to defer discharge increases until they are truly needed. While there was acknowledgement that the improved forecasting method should not be abandoned, the Salmon Managers recommended staying with the 2005 PCA forecast methodology based operation for now.

The COE will take this recommendation under advisement and report back. TMT will revisit Dworshak operations in a conference call next week, when updated information on the anticipated increase in flows will be available.

#### ***4. Kootenai SOR for Libby Operations***

Sue Ireland, Kootenai Tribe, and Joel Fenolio (COE) presented this year's system operational request to accommodate tribal habitat restoration work on the Kootenai River downstream of Libby Dam. The SOR requests a similar operation as implemented for the past two years, a maximum of 8 kcfs outflows from Libby in September and October. The Braided Reach and Middle Meander areas will be the focus of this year's restoration effort. The project is helping the Action Agencies operate in compliance with the BiOp for endangered Kootenai white sturgeon.

Wagner asked whether the proposed operation would target elevation 2449 feet at Libby by the end of August, with releases of 8 kcfs in September regardless of elevation. Joel Fenolio, COE, said the objective is to target an elevation band that allows more operational flexibility between elevations 2449 and 2451.6 feet. The 2.6-foot disparity is equivalent to about 120 KAF, or the difference between releasing 6 and 8 kcfs through end September. This nuance is not embedded in the SOR itself, but the goal of the operation would be to target 2449 feet in Libby reservoir by end September. To achieve that goal, the operation would target an elevation band of 2449-2451.6 feet by the end of August. Libby would then release no greater than 8 kcfs through September 30 or until elevation 2449 is attained, whichever comes first.

TMT members gave their views of the SOR:

- **Oregon** – No objection
- **Montana** – Supports the SOR
- **Washington** – Supports the SOR
- **Idaho** – No objection
- **USFWS** – Supports the SOR
- **NOAA** – Supports the SOR
- **Nez Perce** – No objection
- **Umatilla** – No objection
- **BOR** – Supports the SOR
- **BPA** – Supports the SOR
- **COE** – Supports the SOR

The COE will coordinate further details of implementing this SOR with TMT as part of in-season management. Baus reiterated that the operation will target a Libby elevation of 2449-2451.6 feet by the end of August and elevation 2449 feet by the end of September.

### ***5. Spring Creek Hatchery Operational Request***

David Wills, USFWS, presented the annual fisheries request for modified Bonneville powerhouse operations to accommodate smolt releases from Spring Creek Hatchery on April 11 and May 3. This request is for the same operation as implemented last year: Operate the Bonneville powerhouse 2 units to the midpoint, or 50% of the 1% of peak efficiency range, then divert flows through powerhouse 1 up to the upper 1% limit of peak efficiency, then above the upper 1% limit up to the best operating point if flows continue to increase, then if necessary increasing flows through PH2 up to the upper 1% limit. The goal of this operation is to manage turbulence in the Bonneville PH2 gatewells and reduce descaling and mortality of hatchery smolts, as well as any other small fish that are passing Bonneville at the same time.

On the morning of April 11, from approximately 0800-1100 hours, the hatchery will release a total of 6.4 million juvenile tule fall Chinook salmon. Considering current river flows, the fish are anticipated to begin arriving at Bonneville Dam approximately 24 hours later. Therefore, the request is to begin operating for optimal fish passage on April 12 at 0900 hours and continue for 5-7 days.

In order to implement the Spring Creek Hatchery Release operational request the Action Agencies will operate PH1 and PH2 in the following order as additional generation is needed.

- 1) Operating PH2 units at the mid-point of the 1% peak efficiency range, with a range of 13 and 15 kcfs, targeting 14 kcfs.
- 2) If additional generation is need then operate PH1 units within the 1% operating range,

- 3) If additional generation is needed then operate PH1 units above the upper 1% limit up to the best operating point (BOP), at BOP,
- 4) If additional generation is needed then operate PH2 units within the full 1% operating range.

As a hard constraint the Action Agencies will implement the operation from April 12, 0900 hours until April 17, 0900 hours. As a soft constraint the operation will be implemented from April 17, 0901 hours until April 22, 0900 hours.

## **6. Chum Update**

Wagner reported that the chum population at Hamilton Springs, which is linked to the Ives Island area, appears to be nearing peak outmigration. He recommended continuing the chum operation with a minimum Bonneville tailwater elevation of 11.8 feet. Daily rewetting to 13.5 feet elevation is no longer necessary. The Action Agencies will continue to implement the chum operation as requested through April 9 at 2400 hours.

## **7. Operations Review**

**a. Reservoirs.** Spring spill begins today on all Lower Snake projects. Hungry Horse is at elevation 3536.4 feet, with discharges of 3.5 kcfs. The end of April flood control elevation target is currently at 3533.1 feet.

Grand Coulee is at elevation 1281.8 feet, operating for chum flows and headed to an April 10 elevation of 1279.9 feet. The end of April flood control elevation is currently 1265.1 feet. If the water supply forecast increases from March to April, the end of month flood control elevations will go lower. Tony Norris asked the Salmon Managers to provide an initial flow target for Priest Rapids Dam, given that the Grand Coulee draft from April 10-30 this year might not produce sufficient flows to meet the 135 kcfs BiOp flow target at Priest Rapids. Wagner said flows of no less than 100 kcfs as a weekly average would be a good starting point for now. There was agreement to refine this preliminary estimate at next week's TMT conference call, when updated inflow information and flood control targets will be available.

Libby is at elevation 2394.4 feet, with inflows of 5.9 kcfs and releases of 4 kcfs. Albeni Falls is at elevation 2055.6 feet, with inflows of 23.7 kcfs and releases of 19.2 kcfs. Dworshak is at elevation 1561.3 feet, with inflows of 9.9 kcfs and releases of 9.8 kcfs.

McNary daily average inflows are 158.6 kcfs. Bonneville daily average inflows are 176.1 kcfs. Lower Granite daily average inflows are 54.6 kcfs. On April 4, the COE will implement a test at Lower Granite tailwater to collect velocity data for placement of the new juvenile outfall. The project will hold steady releases of 55 kcfs during the 6-10

hours needed to collect survey data. This could mean exceeding the MOP 1-foot operating range for a short period of time. There were no objections to this operation.

**b. Fish. Adults:** So far this season, 402 spring chinook have passed Bonneville Dam. This is only 15% of the 10-year average passage.

*Juveniles:* Passage season is underway, with 5500 yearling chinook passing Lower Granite yesterday and daily counts increasing. Steelhead passage is also picking up. John Day and Bonneville are seeing some lamprey passage, and 10 lamprey passed Lower Granite in March.

**c. Water Quality.** The spill priority list discussed at TMT in mid March was implemented last night with the beginning of passage season on the Snake, Scott English, COE, reported. All monitoring stations are operational. In response to a recent TMT request for more visible graphics documenting TDG exceedances in the water quality monitoring tables posted to the TMT page, Laura Hamilton, COE, reported that exceedances will appear in a bold font that is easy to read.

**d. Power System.** There was nothing to report today.

## **6. Next TMT Meeting**

There will be a TMT conference call April 10 to discuss the final April water supply forecast, Dworshak operations, Priest Rapids flows and a Vernita Bar update. The next regular TMT meeting will be April 17.

<b>Name</b>	<b>Affiliation</b>
Dave Statler	Nez Perce
Tony Norris	BPA
Charles Morrill	Washington
Lisa Wright	COE
Paul Wagner	NOAA
Jim Litchfield	Montana
Rick Kruger	Oregon
David Wills	USFWS
Doug Baus	COE
Scott Bettin	BPA
Gail Hammer	BPA
Agnes Lut	BPA
Kim Johnson	COE
Karl Kanbergs	COE
Bill Proctor	COE
Scott English	COE
Ron Malmgren	COE
Laura Hamilton	COE

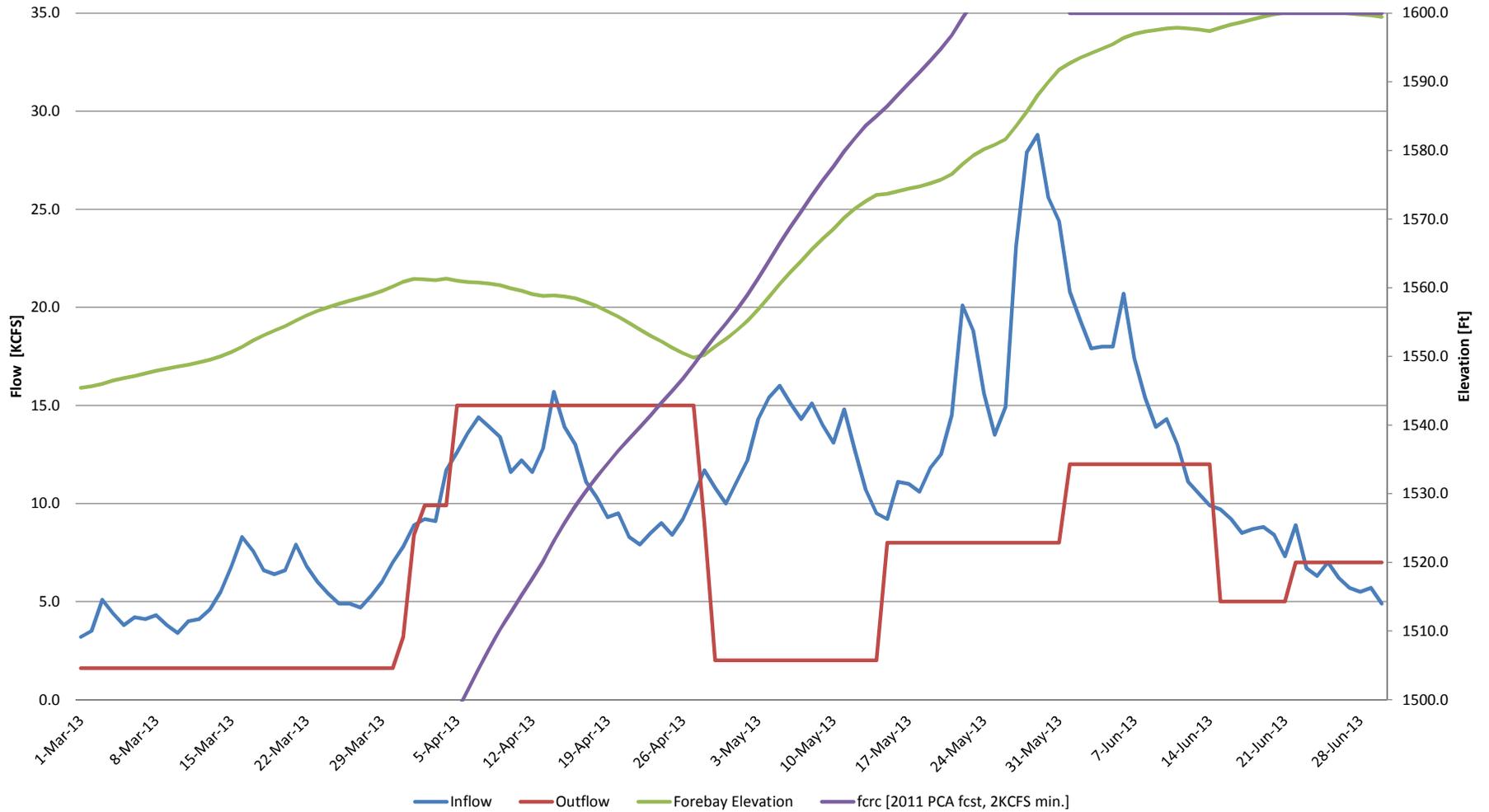
*Phone:*

Keith Wolf	Colville Tribe
John Roache	BOR
Tom Lorz	CRITFC/Umatilla
Russ Kiefer	Idaho
Steve Hall	COE
Kevin Steinmiller	COE Walla Walla
Joel Fenolio	COE
Margaret Filardo	FPC
Dave Benner	FPC
Richelle Beck	Grant PUD
Barry Espenson	CBB
Don Tinker	SCL
Ruth Burris	PGE
Jim Bowden	Energy GPS
Tara Kelly	JP Morgan
Sue Ireland	Kootenai Tribe

### DWR Regulation to Fill 1 July 2013 using 2004 Inflows and 2005 PCA Forecast



### DWR Regulation to Fill 1 July 2013 using 2004 Inflows and 2011 PCA Forecast



# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemmer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT CONFERENCE CALL

April 10, 2013 9:00am - 12:00pm

### CONFERENCE CALL INFORMATION

Phone Number (877) 336-1274

Access Code 3871669

Security Code 9641

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnnv.net](mailto:rgumpert@cnnv.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

## AGENDA

1. Welcome and Introductions
2. Water Supply Forecast Update - Doug Baus, COE-NWD
  - a. [NWRFC WSF Current Conditions TDA](#)
  - b. [NRCS SNOTEL SWE % of Normal](#)
3. Vernita Bar Update - Russell Langshaw, Grant County PUD
  - a. [2012-2013 Hanford Reach Fall Chinook Protection Program](#)
4. Dworshak Operation - Doug Baus, COE-NWD
5. Priest Rapids Flow Objectives - Tony Norris, BPA
6. TMT Guidelines - Robin Gumpert, DS Consulting
  - a. [Final Draft](#)
7. Other

- a. Set agenda and date for next meeting - **April 17, 2013**
- b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:*  
*[Doug Baus](#) at (503) 808-3995*

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

April 10, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Water Supply Forecasts**

Doug Baus, Corps, and John Roache, Reclamation, presented information on the April final water supply forecasts:

- The Dalles April-August 'official': 82 MAF (93% of normal)
- Lower Granite April-July: 16 MAF (80%)
- Dworshak April-July: 2,036 kaf
- Libby April-Aug: 6,189 kaf
- Hungry Horse April-July: 1,935 kaf (103%); May-Sept. 1,750 kaf (103%)
- NRCS Snotel snow water equivalents: Average to below average across the basin
- John later reported on Grand Coulee Jan-July volume, showing 97% of average. Tony Norris, BPA, confirmed their forecast showed Grand Coulee volume at about 100% of average.

### **Dworshak Operations**

Doug Baus, Corps, followed up with TMT after last week's discussion about the possibility of a shift in operations for Dworshak based on the Corps' Walla Walla's proposed use of a new, 2011 PCA, forecast this year. Doug said given the feedback from TMT, the Corps has decided not to make any changes this year so will continue to use the current 2005 PCA forecast and therefore there will be no change to current planned operations. Steve Hall, Walla Walla District Corps, said the current operation at Dworshak was full powerhouse discharge (about 9.8 kcfs) which would likely continue for the next week. The Corps may need to increase discharges later in April based on updated conditions in order to meet the Dworshak elevation target at the end of April. TMT will revisit this issue on 4/17.

### **Vernita Bar Update**

Russell Langshaw, Grant County PUD, walked TMT through a set of slides linked to today's agenda, depicting operations in the Hanford Reach. The projected end of protections for emergence is 4/25; with end of rearing expected on 6/3. Russell said this is earlier than normal, and his second slide provided an

explanation, that temperatures have been above average for the entire protection period. Slide 3 showed operations; there was one exceedance on 3/8. Slide 4 showed the previous week of operations. Russell added that season average outflows have been 89.4 kcfs, with a daily delta of 20.3 kcfs and a 25.8 kcfs constraint. Russell will update TMT on Vernita Bar operations again on 5/1.

### **Priest Rapids Flow Objectives**

Tony Norris, BPA, followed up with TMT from last week when forecasts showed uncertainty about the system's ability to meet spring flow objectives at Priest Rapids. Tony said with the updated April final forecasts, the action agency was no longer concerned and believes the objective will be met.

### **TMT Guidelines**

TMT members worked with the facilitator to update the TMT Guidelines –the final draft with their refinements was posted to today's agenda. Robin Gumpert, Facilitator, said she was looking for approval of the Guidelines with the caveat that the Member List would be updated at a later time after the Corps completed its formal process for bringing the list to current. Robin polled TMT members present on their approval of the Guidelines:

- Oregon – abstain
- Idaho – ok
- Washington – ok
- Montana – ok
- Corps – ok
- Reclamation – ok
- BPA – ok (change spelling of alternate Robyn MacKay's name)
- NOAA – ok
- USFWS – ok
- CTUIR – ok

**Action:** Robin will check with all TMT members not present today and, with no objections, will finalize the Guidelines. These will be posted to the TMT home page. The Corps will complete its process for updating the Member list very soon.

### **Next Meeting, 4/17 Face to Face**

Agenda items include:

- Dworshak Operations

- Transportation Operations
- Spring Creek Hatchery Release
- Reclamation Upper Snake Flow Augmentation

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

**April 10, 2013**

Notes: Pat Vivian

#### ***1. Introduction***

Today's TMT conference call was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of Washington, NOAA, COE, BPA, CRITFC/Umatilla, USFWS, BOR, Montana and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### ***2. Water Supply Forecast Update***

Baus and John Roache, BOR, gave the latest water supply forecasts for individual basins:

- The Dalles – today's (April-August) forecast – 83 MAF, 95% of average; official April forecast (April-August) – 82 MAF, 93% of average
- Lower Granite (April-July) – 16 MAF, 80% of average
- Dworshak (April-July) – 2036 KAF, 76% of average
- Libby (April-August) – 6189 KAF, 105% of average
- Hungry Horse (April-July) 1935 KAF, 103% of average; (May-September) – 1750 KAF, also 103% of average
- Grand Coulee (January-July) – 57 KAF, 96% of average

The NRCF's SNOTEL snow/water equivalent forecast is consistent with current RFC forecasts showing average to below average conditions across the basin, Baus said. The end of April flood control elevation is currently 1258.5 feet at Grand Coulee, Roache said.

#### ***3. Dworshak Operations Update***

The April 3 TMT meeting included a discussion of the improved 2011 PCA forecasting methodology for Dworshak Dam, Baus recalled. The COE initially planned to implement the change in forecasting methodology next year, but the Walla Walla office made a deviation request to implement it now. Continued use of the 2005 PCA forecast this April would result in higher elevations at Dworshak which would impact flows for spring migrants.

In response to the Salmon Managers' consensus recommendation last week regarding early implementation of the new forecasting methodology, the COE has decided to continue using the 2005 PCA forecast methodology for now. There will be no change in Dworshak operations this season per the Salmon Managers' recommendation, Bill Proctor, COE, said.

Paul Wagner, NOAA, asked whether Dworshak discharges are likely to be increased toward the end of April in an effort to beat the rising forecast. Steve Hall, COE Walla Walla, said yes, based on what is currently known about increased inflows. Charles Morrill, Washington, asked whether Dworshak releases would go above full powerhouse next week if inflows increase. Spill cannot begin next week because divers will be in the water making repairs to the hatchery intake through April 17-18, Hall replied. TMT will revisit Dworshak operations during its next conference call April 17.

#### ***4. Vernita Bar Update***

Russell Langshaw, Grant PUD, gave a presentation linked to this item on today's agenda. The first slide shows that emergence in Hanford Reach is expected to end April 25 and protection flows will end June 3. Both of these projected dates are earlier than usual. The second slide graphs temperature data and the third, flow data. The last slide shows what appears to be one exceedance of minimum discharge constraints. However, under the Hanford Reach agreement this would not be considered an exceedance because flows were increased on a Monday, Langshaw pointed out.

To date, seasonal average discharge under the 2013 Hanford Reach protection program is 89.4 kcfs. The average daily delta constraint is 20.3 kcfs. The average flow constraint is 25.20 kcfs, with most days this season having flow constraints of 20-30 kcfs. Langshaw will give another update at the next TMT meeting in person May 1.

#### ***5. Priest Rapids Flow Objective***

Tony Norris, BPA, reported that last week's uncertainty regarding sufficient inflows to meet the 135 kcfs BiOp flow target at Priest Rapids Dam has ended. A robust draft can be expected throughout April in excess of spring flow objectives.

#### ***6. TMT Guidelines***

Gumpert polled TMT members on their support for the latest draft of the TMT operating guidelines as posted to today's agenda. These guidelines were discussed in 2010 but never finalized. TMT members gave their views:

- **Oregon** – No opinion; hasn't reviewed the guidelines
- **Idaho** – Supports the guidelines
- **Washington** – Supports the guidelines
- **COE** – Supports the guidelines
- **Montana** – Supports
- **BOR** – Supports
- **BPA** – Supports
- **NOAA** – Supports
- **USFWS** – Supports

- **Umatilla** – Hasn't formally reviewed the guidelines but supports them unless further notice is given

## **7. Next TMT Meeting**

TMT will meet next in person on April 17.

<b>Name</b>	<b>Affiliation</b>
Charles Morrill	Washington
Paul Wagner	NOAA
Tony Norris	BPA
Doug Baus	COE
Tom Lorz	CRITFC/Umatilla
David Wills	USFWS
Agnes Lut	BPA
Heather Dohan	Puget
Lisa Wright	COE
Barry Espenson	CBB
Margaret Filardo	FPC
Dave Benner	FPC
Steve Hall	COE Walla Walla
Don Tinker	SCL
Rick Kruger	Oregon
Richelle Beck	Grant PUD
Bill Rudolph	NW Fish Letter
Russ George	WMC
Bruce McKay	consultant
Greg Lawson	Thompson Reutters
John Roache	BOR
Russell Langshaw	Grant PUD
Russ Kiefer	Idaho
XX	Iberdrola Renewables
Ruth Burris	PGE
Bill Proctor	COE
Shane Scott	PPC
Brian Marotz	Montana

## 2012-2013 Hanford Reach Fall Chinook Protection Program (HRFCPP)

### HRFCPP Lifestages

	Begin (000 hrs)	End (2400 hrs)
Spawning Period	10/24/2012	11/18/2012
Pre-Hatch Period	10/24/2012	1/22/2013
Post-Hatch Period	12/2/2012	4/24/2013
Emergence Period	3/2/2013	4/25/2013
Rearing Period	3/2/2013	6/3/2013

### HRFCPP Constraint dates

HRFCPP Section	Begin (000 hrs)	End (2400 hrs)	Current constraint as of 04/08/13
C.1(c)	10/24/2012	11/18/2012	
C.2	10/24/2012	12/1/2012	
C.3(a)	12/2/2012	3/1/2013	
C.3(b)	12/12/2012	3/20/2013	
C.4(a)	3/2/2013	4/25/2013	Y
C.4(b)	3/21/2013	4/25/2013	Y
C.5(b)(1-5)	3/2/2013	6/3/2013	Y
C.5(b)(6)	3/30/2013	4/21/2013	Y

	Initiation of spawning	ATUs (celcius) through 04/08/13
<36 kcfs elevation	10/24/2012	1217.2
36-50 kcfs elevation	10/24/2012	1217.2
>50 kcfs elevation	10/31/2012	1119.4
End of spawning	11/18/2012	870.2
Temperature on 04/08/13		7.5
Critical Elevation (kcfs)	65	

Current date  
4/9/2013

Data through:  
4/8/2013

Exceedances: 1

[Link to TU data](#)

[Link to discharge data](#)

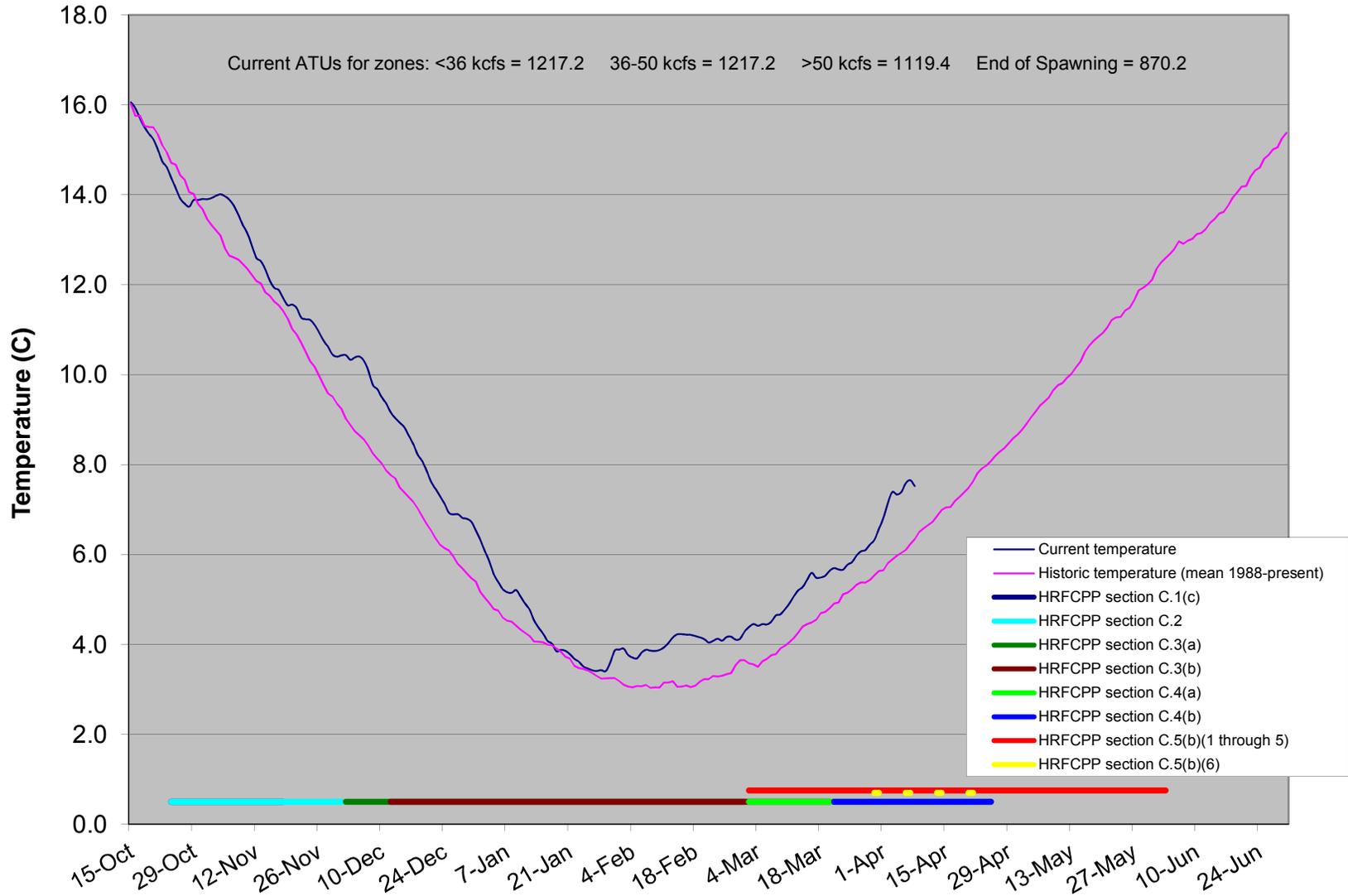
Cell are highlighted in yellow when ATU criteria are met.

Cell are highlighted in red when these constraints are currently in effect

Dates with red text are predicted based on current conditions and data from 1988 to present

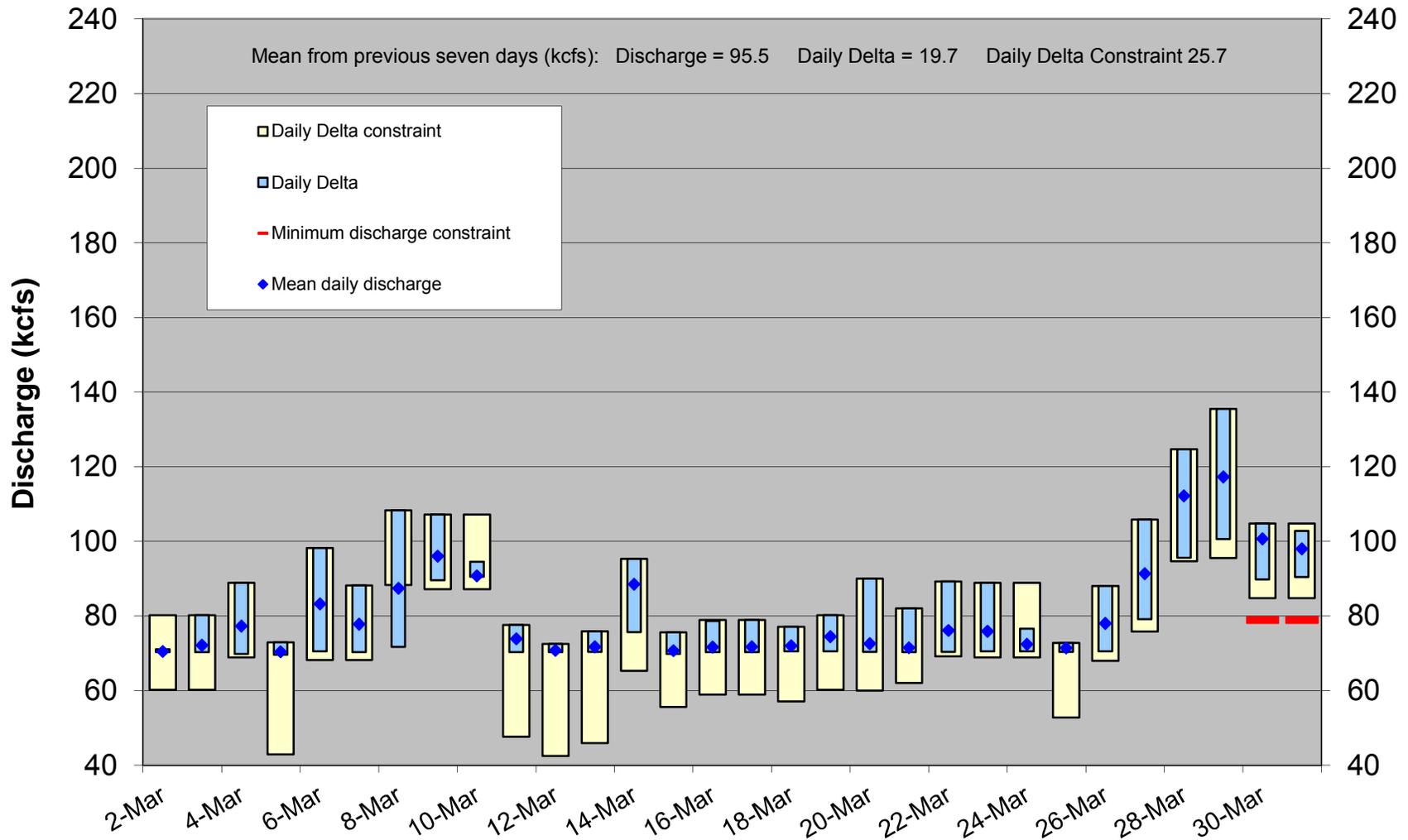
<http://grantpud2.org/data/water/fixd/2013/summary/tdg-monthly-summary-2013.xls>

## 2012-2013 PRD Tailrace Temperatures and HRF CPP constraints



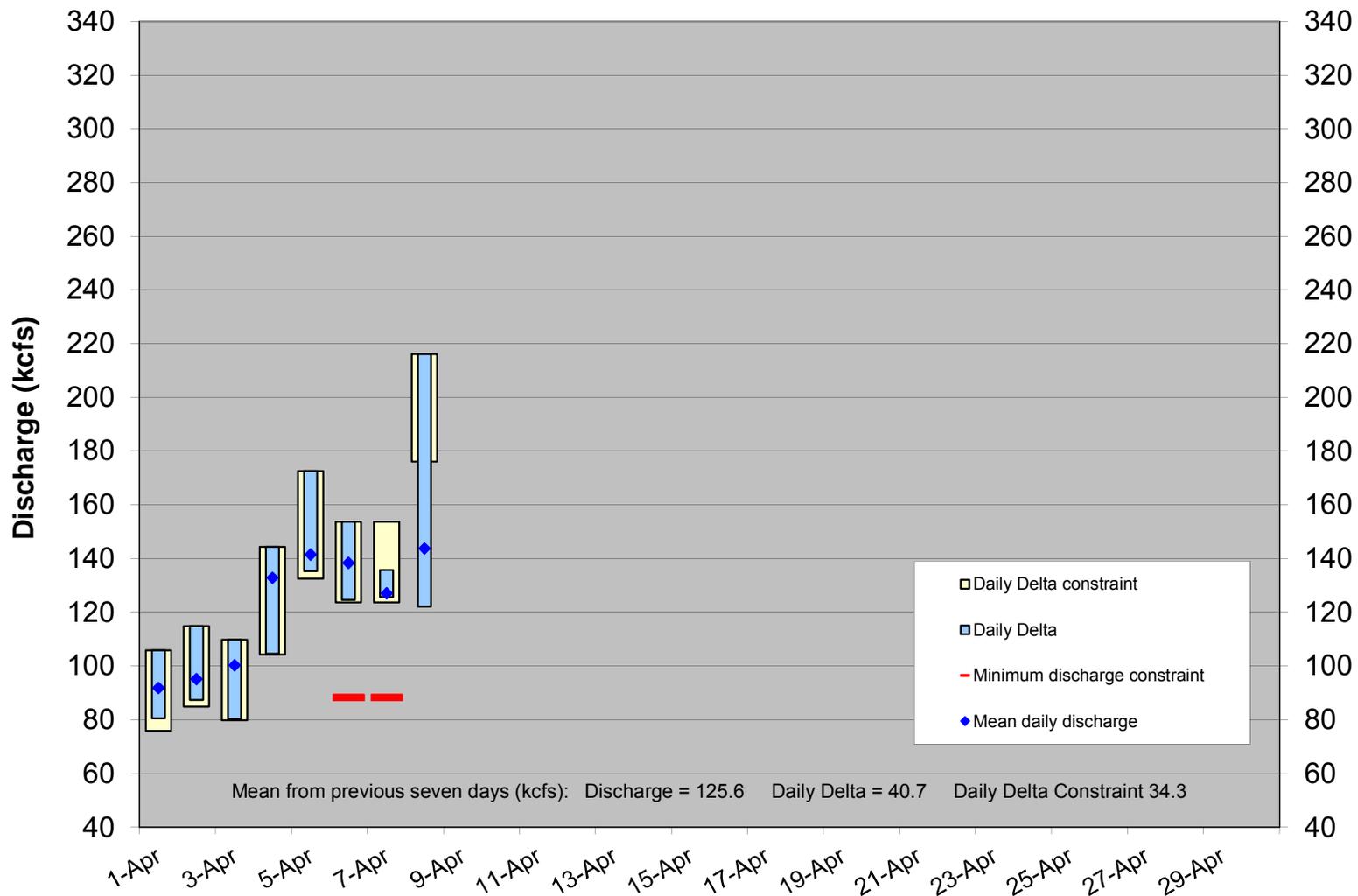
# Priest Rapids Dam Operations 2013

Number of exceedances: 1



# Priest Rapids Dam Operations 2013

Number of exceedances: 0



**Regional Implementation Oversight Group  
TECHNICAL MANAGEMENT TEAM  
Team Guidelines**

DRAFT April 2013

I. Introduction

Federal, tribal and state governments share jurisdiction over salmon and steelhead and related water management issues across the Columbia Basin. These governments have participated in a multi-year collaboration process to inform the federal Action Agencies and NOAA regarding the development and implementation of the Biological Opinions (BiOps) for the Federal Columbia River Power System (FCRPS). Priorities for implementing the BiOp are based on the needs of the ESA listed salmon, steelhead, and resident fish species; hydro impacts and opportunity to address key limiting factors.

As described in the BiOps and related documents, the Regional Implementation Oversight Group (RIOG) has been established to provide a high-level policy forum for discussion and coordination of the implementation of the FCRPS and related BiOps. The overall purpose of RIOG is to inform the federal, state and tribal agencies that are actively engaged in salmon recovery efforts regarding implementation issues from each sovereign's perspective.

FCRPS BiOp Implementation will consider a broad, long-term fish recovery context and ecosystem (All H) approach. The RIOG will consider results and adaptive management at the species, or ESU/DPS, level.

The RIOG is a forum for interagency coordination and does not supplant existing federal, state or tribal decision making authorities. All decisions under the authority of the federal government will continue to be made by the appropriate federal agency with the statutory authority to make such decisions.

For FCRPS hydro system implementation issues, the RIOG Senior Policy Group (RIOG) is supported by a Senior Hydro Technical Team (Senior Hydro Team), which in turn is supported by the Technical Management Team (TMT), the System Configuration Team (SCT), and other technical teams. The TMT operates under the RIOG Guidelines and Procedures approved October 31, 2008. The following more specific guidelines supplement the RIOG's procedures for TMT operations. These guidelines are adopted in accordance with the RIOG Guidelines and Procedures. As the RIOG procedures are refined, these guidelines may be revised.

II. Scope

The TMT's mission is specifically to ensure broad technical participation and use of the best available technical information, and to encourage regional consensus on technical

recommendations regarding operations of the FCRPS. The focus of the TMT is to assure FCRPS operations specified in the NMFS and USFWS BiOps are implemented while considering the provisions of (and effects on) the Northwest Power and Conservation Council's (NPCC) Fish and Wildlife Program, other BiOps, State and Tribal plans and programs, and other relevant operational requirements. Specifically, the TMT should explore operational scenarios under the BiOps that would serve to protect other fish and wildlife in the Columbia River Basin and promote coordination and consistency with these other objectives to the extent possible.

### III. Membership

See Requirements for All Technical Teams in Section VIII below. The members and alternates of the TMT are listed in Attachment 1. Initial confirmation of membership, designation of representatives, and any changes in representation should be provided in writing to all members of the Technical Management Team.

### IV. Roles and Responsibilities

The U.S. Army Corps of Engineers (Corps), Bureau of Reclamation (Reclamation), and Bonneville Power Administration (BPA), collectively referred to as the Action Agencies (AAs), consult on the effects of the operation of 14 Federal multi purpose hydropower projects in the Federal Columbia River Power System (FCRPS) on listed species with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS).

Federal, State and Tribal fisheries managers are responsible for the management of anadromous fish and resident fish in the basin. The Corps and Reclamation are responsible for decisions on operation of the FCRPS projects; and the Corps and BPA are responsible for Treaty agreements with Canada regarding storage in Canada and other Treaty-related matters. The participation of other affected sovereign and non-sovereign entities is intended to ensure that decision-makers have the broadest possible source of information upon which to base their decisions. Input can provide alternative options for the appropriate authority to consider when making their decisions.

### V. Operating Procedures

#### a) Annual Water Management Plan

The Annual Water Management Plan is developed and used by the Action Agencies as a decision-making and management tool, and includes all known or typical operations that will be implemented throughout the year based on prior years' gathered data. In its current form, it is a draft "Seasonal Update" that is amended throughout the management year as needed to reflect actual operations taking place.

Each year, the TMT will discuss and make suggested updates to the Water Management Plan Seasonal Update based on prior years' experience, updated procedures, or regulatory changes. The draft will be available for review in October. All interested parties may participate in the plan development and will be given an opportunity to review and comment on the draft plan. In general, the fisheries managers will provide information on salmon operational requirements, the needs of other anadromous fish (such as Pacific lamprey) and the needs of resident fish (such as bull trout) to be included in the plan. The Action Agencies will provide information on reservoir status; planned project operations (and operating constraints); flow forecasts; anticipated special operations for research and other purposes; turbine outage and maintenance plans; and operating agreements and contracts that may affect annual operations. Guidance on how priorities should be set among competing needs should be provided by the plan. The Action Agencies will be responsible for finalizing the Water Management Plan.

b) Summary of In-Season Management Weekly Events

The following weekly timeline is established to support a successful TMT process for timely information exchange, productive discussions at TMT meetings and informed in-season management decisions. While adhering to this timeline would best support the process, TMT members understand the need to be flexible around the schedule in order to adapt to changing and unforeseen conditions.

Tuesday:

Salmon Managers discuss the TMT agenda and upcoming operations at a Fish Passage Advisory Committee (FPAC) meeting.

- Action Agencies discuss the TMT agenda and upcoming operations via conference call. Before the end of the conference call, the Fish Passage Advisory Committee (FPAC) Chair is connected to the Action Agency call to coordinate on the TMT agenda.
- TMT Members (or others) submit SORs to the Reservoir Control Center (RCC) via email by 4:00 PM and/or emails copies directly to all TMT members and participants. The Salmon Managers will email SORs to all project owners for which an operation is requested. The Salmon Managers will post the SOR to the Fish Passage Center web page, and an electronic version of any SOR will be simultaneously sent to the Corps so that it is available for the TMT web page.

Wednesday (9 am):

- The TMT meets bi-weekly, with conference calls scheduled as needed, to discuss in-season management data and SORs, document operations, and recommend the following two weeks' operations. The actual meeting schedule may be adjusted by TMT consensus to accommodate special circumstances. By the start of the meeting, all SORs and the disposition will be posted to the TMT web page for use by members who can not attend the meeting.

Friday (pm):

- The TMT draft Official meeting minutes and Facilitators' notes will be emailed to TMT members.

c) In-season Management Data

The TMT will consider the forecasts produced by the National Weather Service's Forecast Center's (RFC) Ensemble Stream Procedure (ESP), the Corps' single trace procedure (STP) EW, the Corps' volume inflow forecast for the Libby and Dworshak projects, and Reclamation's inflow forecast for the Hungry Horse project. These forecasts (and the basic reservoir operations that are assumed when producing them) are the official forecasts to be used for the decision-making process. The BPA forecast may be used as supplemental information. The Corps will use the RFC forecast to prepare flow projections for Priest Rapids, McNary and Lower Granite.

The Action Agencies will also provide dissolved gas, temperature, and other physical monitoring data available for decision-making.

The fisheries managers will provide current and historical biological information on salmon and steelhead numbers, migration timing and condition. Relevant information on other fish and wildlife resources (e.g. sturgeon, bull trout, lamprey and pinnipeds) will also be provided as appropriate.

d) System Operational Requests

System Operational Requests (SOR) are an in-season management tool for bringing forth requests to deviate from or refine planned, existing or BiOp recommended operations. These requests should provide an operation of the hydrosystem that will provide a biological benefit for listed fish or other aquatic species of concern, and/or protect human health and safety.

TMT members may provide recommendations to the TMT on hydro system flows and/or expected project operations consistent with the scope of these guidelines. Non-TMT members may also submit recommendations for consideration. These recommendations will be in the form of system operational requests (SORs) stating the operation objective(s) sought (e.g., keep flows at a location X in a W-Z range). Expected project operations may also be added. Each SOR will include the biological or operational basis for the recommendation. Each SOR will also indicate whether the request is to implement a NMFS or USFWS BiOp, NPCC Fish and Wildlife Program, or other Federal, State or Tribal program. Non-TMT members may also submit SORs for special operating purposes for TMT consideration.

SORs should list members of the agencies who have reviewed and support the request. The SOR will be outlined for description on the TMT SOR disposition web page. The SOR will be posted to the agenda prior to the start of the TMT meeting so that telephone

participants can follow the conversation at the meeting. If proposals are incomplete, or are not received in time for sufficient review, the TMT may choose to delay action, but lack of an SOR should not preclude discussion of relevant matters at the meeting.

When an SOR has been properly submitted, the Action Agencies should be prepared at TMT to describe the operational options and implications of meeting the request. Any decision to implement or not implement will be recorded in the official meeting materials and summarized at the end of those minutes. The meeting facilitator will clarify the decision at the meeting to assure that the record accurately reflects the disposition of the request.

The discussion of SORs at TMT meetings will include distinct segments dealing with both biological and operational issues. Biological questions associated with an SOR will be addressed to ensure that the biological basis of the SOR is clear, and to allow the TMT to consider any additional biological information that may be made available at the meeting.

The meeting will then move on to a discussion of operational alternatives to meet the SOR by the Action Agencies and members of the TMT. The Chair should ensure that adequate time is allotted to each segment of the meeting.

The Chair should also ensure that the support or opposition of each TMT member for an SOR and a final decision by the Action Agencies are noted in the minutes.

#### e) Meetings

Between the last week of March and up to at least August 31 the TMT will meet every other Wednesday, or more often if necessary, to conduct in-season management. All meetings will be open to interested parties. A conference line will be available for those who cannot attend in person.

An agenda for each meeting will be posted to the TMT webpage as soon as possible prior to the meeting (the preceding Monday in the case of the regularly scheduled in-season meetings). The principal purpose of the meetings and standing agenda items during the migration season is to review the status of the preceding week's SOR and operations, biological data, new SORs and project operating data, and to reach informed decisions on FCRPS operations for the following week(s). As other items are brought forward for TMT consideration, they will be added to the agenda for future discussion, but lack of an agenda item will not preclude discussion of relevant matters at the meeting.

#### f) Meeting Facilitation

Meetings of the TMT will be facilitated by an impartial facilitator, who will allow all TMT members the opportunity to fully participate in discussions and to help members resolve conflicts as they arise. The meeting facilitator shall serve at the will of all members of TMT and should have skills as a meeting manager and conflict resolver. The meeting facilitator's role will include:

- Assisting the chair and TMT members in the development of meeting agendas
- Managing the meeting agenda in a balanced and even-handed fashion so that all members have an opportunity to speak and be heard
- Helping the group stay focused on the agenda and prioritize items that need action and further discussion
- Enforcing the ground rules established by the TMT (see Attachment 2)
- Helping the group reach consensus on decisions
- Helping the group resolve conflicts that may arise in the course of discussion
- Highlighting any decisions the group may reach
- Working with members between meetings to clarify issues, resolve disputes, and seek potential solutions to impasses
- Assisting members to develop opportunities that may resolve conflicts and increase the overall satisfaction with the TMT process in the long term, and
- Helping the group maintain a sense of humor

TMT members may give feedback directly to the facilitator or to the chair if they have concerns with the manner by which meetings are managed. The facilitator will be replaced if, after discussion with the facilitator, members or the facilitator believe he or she is not able to remain impartial in the delivery of service.

#### g) In-season Decision Making

During TMT meetings, the TMT will discuss and recommend future operations based on the available information and any pending SORs. These operating recommendations will be made by consensus whenever possible. Consensus is defined as lack of a formal objection amongst TMT members present during the meeting or after a polling of members not present when TMT members agree the issue is important to an entity not present at the meeting – or if the item was not clearly identified on the day’s agenda ahead of time. . In the absence of consensus amongst TMT members, the issue will be framed for the RIOG in accordance with the dispute resolution process described below (see Requirements for All Technical Teams #8.) Objections to decisions that are not strong enough to prompt one or more TMT members to elevate the issue will be documented in the minutes of the TMT meeting.

If the recommendation is to implement the SOR or a modification of the SOR as agreed to by the TMT, then this should be documented for the minutes, and the SOR (and the BiOp, Council’s program or other plan on which it is based) may form the basis for the decision. If the Action Agencies do not agree to implement an SOR, they will describe for the minutes both the intended operation and the basis for that decision, which may relate to the BiOp, operational constraints, cost or an alternative view of the best available biological information. In each case, a full explanation will be provided by the Action Agencies to the TMT.

The final decision made by the Action Agencies on the following week's operation will be made at the meeting whenever possible. In-season FCRPS operating decisions made through a separate process, such as those under the Action Agencies' authority for emergency situations, will be explained and documented as soon as possible, but in any case no later than Friday following the TMT meeting.

h) Documentation

Drafts of the Official Meeting Minutes and Facilitator's Summary Notes for all TMT meetings will be shared with TMT members as soon as possible following each TMT meeting. Once reviewed by TMT members, the meeting minutes and summary notes will be posted to the TMT home page, ideally by Tuesday afternoon prior to the next meeting. Additional comments on either set of documents may be provided and discussed at the following meeting.

The TMT meeting minutes will be used to keep track of the decision-making process. The minutes will include the substance of any SOR, the decision, the decision-maker, and the basis for the decision. The minutes will also include: (1) documentation of consensus or a listing of members objecting to an SOR or a final decision; and (2) when an SOR is not implemented, clear documentation of the reasons provided by the decision-maker.

If a decision is elevated and therefore not made at the weekly TMT meeting, documentation on the final decision reached will be provided separately in writing and will include the same information noted above. This documentation of the decision should happen before the next regularly scheduled TMT meeting and be sent to the Chair of TMT, who will post it on the TMT homepage.

Each member is responsible for reviewing the decision documentation and the meeting minutes, especially if the agency he/she represents is one of the decision-makers.

Interested parties may request copies of the minutes if they have no access to the TMT homepage.

i) Distribution of Information

Meeting notes and material will be made available to TMT participants throughout the year. These materials will be made available through the TMT home page and may also be emailed to members and participants that request such services.

j) Public Participation

The public may comment on an issue at the end of the discussion on that issue or at the end of the meeting, based on the discretion of the group and the facilitator. They may also comment outside the TMT process.

VII. Unscheduled Meetings

Any member of the TMT may call an unscheduled meeting when a situation requires action of the TMT before the next scheduled meeting.

VIII. Requirements for all Technical Teams – (Per “RIOG Collaboration Teams and Operational Guidelines”)

1. **Membership:** RIOG sovereigns should appoint one member and one alternative to the various RIOG teams.
2. **Chair:** The team chair should be a federal agency representative, although a state or tribal representative may serve as a coordinator or co-chair.\*
  - a. \*Historically, FPAC has included State and Tribal Chairs.
3. **Charters:** Each team should develop processes for conducting business, developing work products, and collaborating on relevant issues.
4. **Agendas and Materials:** Agendas will be developed by the technical team chairs, with input by team members. Agenda topics shall be within scope of the RIOG guidelines and focus on FCRPS BiOp implementation. Agendas and materials should be available ahead of time & posted on FCRPS website. A goal is to have materials available one week in advance.
5. **Administrative Record Keeping:** Agendas, materials, attendance lists and meeting notes should be maintained by each team, posted on the RIOG website and retained as federal administrative records at the respective agency.
6. **Assignments:** Assignments will come from the RIOG chair to the respective team chair, and the details transmitted via the RIOG template. There are three types of assignments:
  - a) Assignments based on the scope of work for each technical team as identified in the RIOG and TMT guidelines,
  - b) Assignments based on a specific request for collaboration and input from the Action Agencies or NOAA, and,
  - c) Assignments based on a specific request from the RIOG.
7. **Reporting Progress to the RIOG:** Assignments made by the RIOG should be completed by the deadline, except as mutually agreed. The technical team chair is responsible for developing, coordinating, and reporting these results in a timely manner.
8. **Raising Policy Issues or Disputes to the RIOG** (language per “2010 Hydro Dispute Resolution Procedures”):

On January 19, 2010, the RIOG approved the following hydro dispute resolution procedures on a trial basis. The goal of these procedures is to provide an efficient and timely process to address in-season management and other potential disputes.

When policy guidance is needed or if there is a dispute, the technical team will discuss the issue and identify or narrow the specific issue or question in dispute. If a team is unable to reach resolution, the Technical Team Chair may poll the sovereigns for their views and input.

In the case of a short-term dispute (e.g. where a decision is required within 2 weeks), the responsible federal agency will make a decision after considering the views and input of the technical team. The federal agency with the authority to make the decision will notify the RIOG and technical team members about its decision and rationale in a timely manner.

If a technical team member contests the federal decision, he/she should confer with their RIOG Senior Policy Team representative. The RIOG representative may further raise the issue to the Senior Hydro Team Chair for further consideration. If further discussion is warranted, the Senior Hydro Team Chair will convene the team to prepare a RIOG Policy Briefing Paper, with the assistance of technical team members. The RIOG may have a conference call to further address the dispute in a timely matter.

In the case of a longer-term dispute, the technical team chair should bring it to the attention of the Chair of the Senior Hydro Team. In communicating the issue to the Chair of the Senior Hydro Team, the notification should include the RIOG Chair and the RIOG Coordinator.

The Chair of the Senior Hydro Team will convene the Team to further discuss the issue and prepare a RIOG Briefing paper according to the RIOG template (see attached), with the assistance of technical team members. Team members may be asked to supply additional information during the process.

At times, technical team and RIOG meetings may include a polling of sovereign views on a given issue. Sovereign views will be made by designated representatives (or their alternates) registering support/consent, no objection, objection, or abstention to a decision made at a noticed meeting or conference call.

Each member organization is responsible for having a representative or alternate present at these meetings (in person or by conference call) to register consent, objection, or abstention on a decision. Every effort will be made to ensure that those members who feel strongly about an issue can be present at the meeting at which the issue will be discussed. Each sovereign is encouraged to provide coordination and communication between technical team and RIOG members.

The RIOG may include an opportunity for public input into a policy issue or dispute. If so, timely notice and relevant materials will be made available to the public.

The federal agency with the authority to make the decision will notify the RIOG and technical team members about its decision and rationale in a timely manner. Agency decisions, RIOG comments and supporting materials will be posted on the RIOG website and maintained in the respective federal administrative records.

Based on recommendations or requests from the RIOG, policy issues and disputes may be further elevated to the Regional Executives, which include the federal administrative heads, Governors and Tribal Chairs.

ATTACHMENT 1 PLACEHOLDER: List Currently Being Updated

**TECHNICAL MANAGEMENT TEAM (TMT) MEMBERS**

**ORGANIZATION - REPRESENTATIVE / ALTERNATES**

National Marine Fisheries Service - Paul Wagner / Richard Dominigue  
U. S. Army Corps of Engineers - Doug Baus / Karl Kanbergs /  
Bonneville Power Administration – Tony Norris / Scott Bettin /Robyn McKay  
U.S. Bureau of Reclamation - John Roache / Mary Mellema / Pat McGrane  
U.S. Fish & Wildlife Service - David Wills / Steve Haeseker  
State of Washington - Charles Morrill/?  
State of Oregon – Rick Kruger /  
State of Idaho - Russ Kiefer / Pete Hassemer  
State of Montana - Jim Litchfield / Brian Marotz  
Coeur d’Alene Tribe of Idaho – Tiffany Allgood ?  
Confederated Tribes of the Colville Indian Reservation –Sheri Sears/Steve Smith  
Nez Perce Tribe of Idaho – Dave Statler /Dave Johnson  
Kootenai Tribe of Idaho – Sue Ireland / Billy Barquin  
Confederated Salish & Kootenai Tribes of the Flathead Reservation – Joe Hovenkotter  
Shoshone-Bannock Tribes of Fort Hall – Lytle Denny ?  
Spokane Tribe of Indians - Deanne Pavlik-Kunkel / Andy Miller  
Confederated Tribes of the Umatilla Indian Reservation (CTUIR) – Tom Lorz / Kyle Dittmer (CRITFC)  
Confederated Tribes of the Warm Springs Reservation – Brad Houslet  
Yakama Indian Nation – Bob Rose

**ELIGIBLE ORGANIZATION WITH  
NO OFFICIALLY DESIGNATED  
MEMBER - CONTACT PERSON / ALTERNATE**

Shoshone-Paiute Tribes of Duck Valley Reservation  
Burns Paiute Tribe  
Kalispel Tribe  
State of Alaska

## ATTACHMENT 2.

### **MEETING GROUND-RULES & EXPECTATIONS**

The following meeting ground-rules and expectations were discussed and agreed to by all TMT members present at the **TBD** meeting of the TMT. They may be changed at the request of the Team.

#### I. Ground-Rules

Meetings will start and end on time unless members agree otherwise.

Members will treat each other with respect, which includes:

- Separating the people from the problem
- Listening to what others have to say
- No interruptions
- Monitoring your own air time
- No side conversations
- Letting the facilitator or chair know when you would like to speak
- Being mindful of tone and language when speaking directly to others or to the group
- Remembering that members are representing agencies, not stating individual opinions

During in-season management, each member agency/group will have one primary TMT representative who will sit at the table during meetings. Alternates or technical resource staff are welcome to attend and provide input through their primary representative, or when called on by TMT members. All are welcome to sit at the table --with preference for the primary representatives if there is a space limitation.

Any issues elevated from the TMT to the RIOG or Senior Hydro Team will be thoroughly discussed at TMT. TMT members will agree on the “issue statement” for elevation. The TMT Chair will then present the issue at the RIOG or Senior Hydro Team meeting. All TMT members will brief their agency RIOG representative on the issue prior to the RIOG meeting.

The meeting facilitator may make process comments in order to keep the group on track, focused and productive.

#### II. Expectations

Members are expected to come prepared to participate in the meetings. This means, they

will provide necessary input to discussions and work towards making decisions based on information they have gathered from their respective agencies between meetings.

Members are expected to keep their agencies and staff apprised of decisions or important meeting discussions. Members are encouraged to keep their RIOG members up to date on issues addressed at TMT.

Members are expected to attend all meetings or send an alternate. If an alternate attends the meeting, a briefing, both before and after the meeting, is expected of the primary representative. The group will not revisit information for members who were absent from or late to a meeting unless time allows for it and this is the will of the group.

Members are expected to follow through on assignments to which they agree, or are given by other team members, on a timely basis. This includes requests for comments on information or reports from other team agencies.

The meeting facilitator is expected to keep the group on track and focused on agenda items. Additionally, the group expects the facilitator to assure equal participation, highlight any decisions that the group reaches, and maintain a sense of humor.

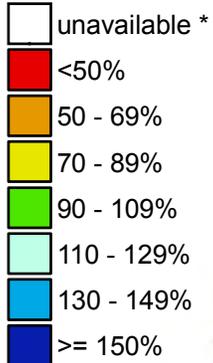
People who listen in on the telephone are expected to “sign-in” as they call in on the conference telephone line.

Group members may contact the facilitator at any time to make process suggestions, raise concerns or request additional assistance at or between meetings.

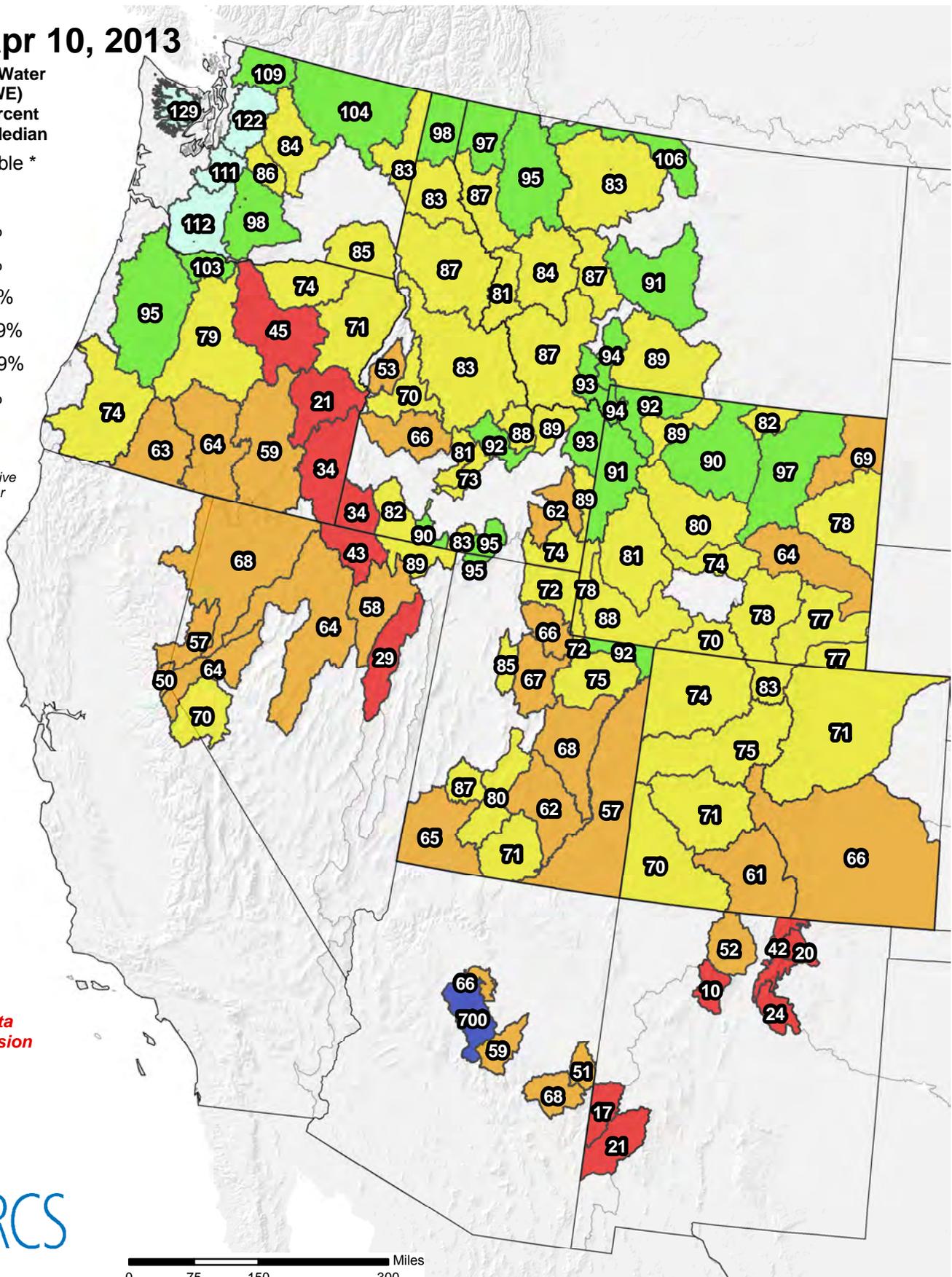
# Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

## Apr 10, 2013

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



\* Data unavailable at time of posting or measurement is not representative at this time of year



*Provisional data  
subject to revision*



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center  
Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>  
Based on data from <http://www.wcc.nrcs.usda.gov/reports/>  
Science contact: [Jim.Marron@por.usda.gov](mailto:Jim.Marron@por.usda.gov) 503 414 3047

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

Wednesday April 24, 2013 9:00am - 12:00pm

1125 N.W. Couch Street, Suite 500, Columbia Room  
Portland, Oregon 97209-4142  
Map Quest [\[Directions\]](#)

**TMT MEETING**  
Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 1984

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.**  
**Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnmv.net](mailto:rgumpert@cnmv.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

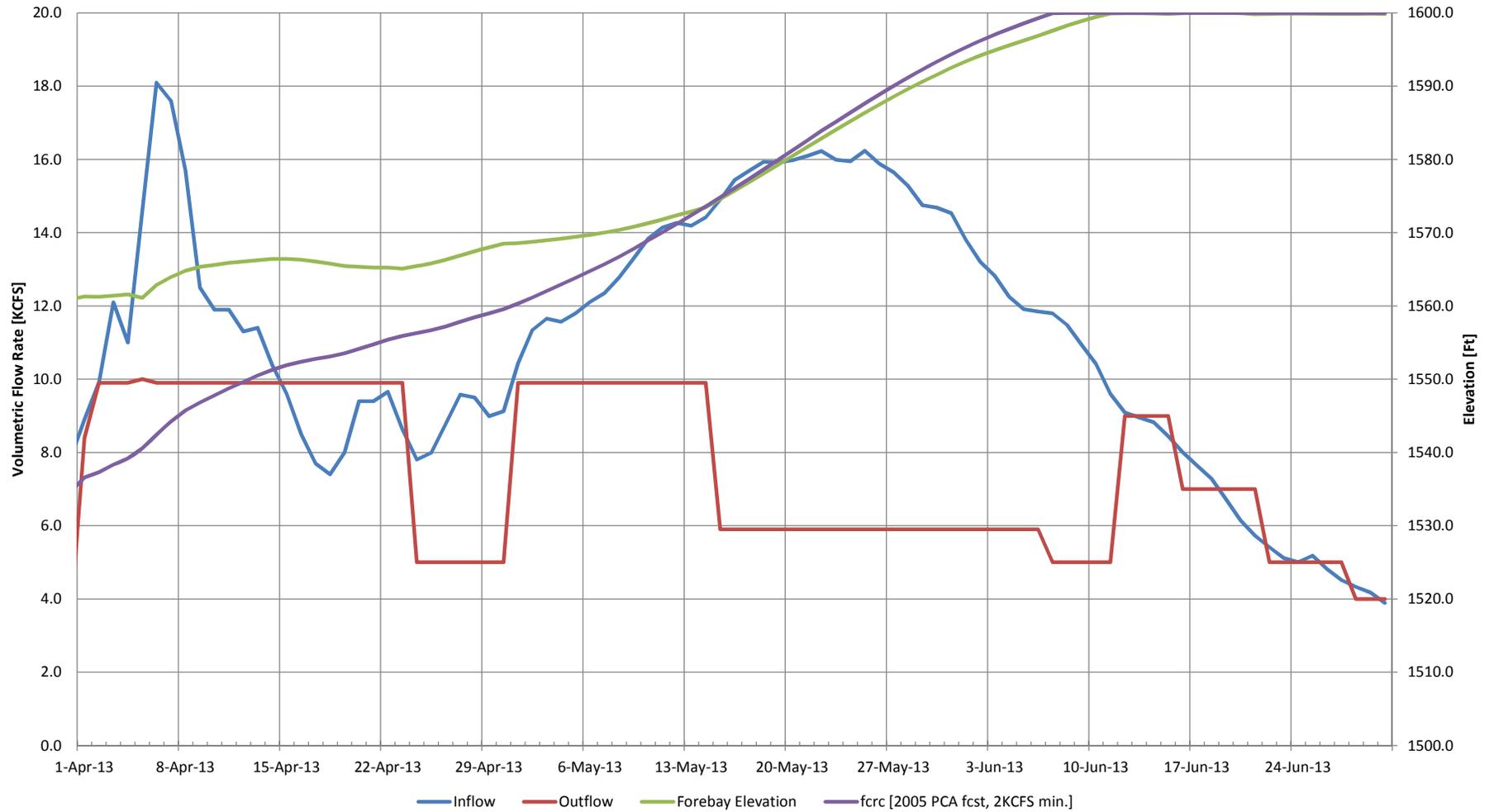
## AGENDA

1. Welcome and Introductions
2. Review April 3 and 10 Meeting Minutes
3. Lower Snake River Transportation - Paul Wagner, NOAA Fisheries
4. McNary Transportation SOR 2013-01- Paul Wagner, NOAA Fisheries
  - a. [SOR 2013-01 MCN Transport](#)
5. Spring Creek Hatchery Release Update - David Wills, USFWS
  - a. [BON Spring Creek summary, April 12-20](#)
6. Upper Snake River Flow Augmentation - John Roache, BOR

7. Dworshak Operations - *Karl Kanbergs, COE-NWD, Steve Hall, COE-NWW*
  - a. [Dworshak Operations](#)
  - b. [Lower Granite STP](#)
  - c. [SOR 2013-02 Dworshak Dam Flow](#)
8. Libby and Albeni Falls ESP Traces Website - *Joel Fenolio, COE-NWs*
  - a. [LIB, ALF Operational Projections](#)
9. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
10. Other
  - a. Set agenda and date for next meeting - **April 24, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Dong Baus](#) at (503) 808-3995*

### DWR Regulation to fill by 1 July 2013 using STP Inflows



# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

April 24, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Meeting Minutes Review**

TMT reviewed the 4/3 and 4/10 Official Minutes and Facilitator's Notes. With no suggested edits, they were considered final.

### **Announcements**

Rick Kruger, Oregon, introduced Erick Van Dyke who will be joining TMT as the Oregon representative when Rick leaves in June. Erick will be with TMT at least until September. TMT members welcomed Erick to the team.

Facilitator Robin Gumpert also noted that the TMT Guidelines had been finalized and posted by the Corps to the TMT Schedule page. The group was reminded that one of the meeting protocols asks that the agenda time be reserved primarily for TMT members to deliberate on the topics, and that other public members will be allowed to ask questions or contribute to the discussion as time allows or a TMT member specifically invites someone to speak. This is mostly important when agendas are full and topics require recommendations/decisions from the team.

### **McNary Transportation SOR**

Paul Wagner, NOAA, presented this SOR, saying it was very similar to the request made last year for no transportation at McNary during the summer season. The salmon managers put the proposal together based on the FOP guidance that this issue should be addressed through FPOM and at TMT. They wanted to get the request in early to avoid any potential contract issues. Paul said the main driver for this request was that there have been structural changes to the system, with a new bypass constructed last year at the project, which should benefit in river fish. Charles Morrill, Washington, added that last year saw 94.6% survival out of the bypass.

In addition to the signatories to the SOR (NOAA, USFWS, Oregon, Washington, Idaho, Nez Perce, and CRITFC/Umatilla), Montana expressed no objection to the request today.

**Action/Next Steps:** The Action Agencies acknowledged receipt of the request and said they needed some time to review it from a policy standpoint, and will get back to TMT with a response either next week during the 5/1 TMT conference call, or the following 5/15 TMT meeting.

### **Lower Snake Transportation**

Paul Wagner, NOAA, began the discussion acknowledging the FOP guidance for Lower Snake transportation operations beginning between 4/20 and 5/1. He said FPAC had a 'lively discussion' of this topic and did not reach resolution on NOAA's recommendation to begin transportation on 4/28 this year, earlier than FPAC's traditional recommendation to begin on 5/1 in recent past years. His justification for this was that ISAB had recommended a 'spread the risk' approach given the data uncertainty around the issue of juvenile transportation. The ISAB did not address such details as which particular date to begin juvenile transportation. Paul also noted that ocean arrival timing is an important factor to consider. With the earlier start date, he felt that a more balanced number of fish would be transported and remain in-river, and given the low flows in the Snake River this year the transported fish would arrive in the lower Columbia River closer to the May 1 arrival date when peak SARs for juveniles passing that project are observed. That said, he acknowledged that in-river survival has been very good in recent years but that the SARs were not showing a conclusive positive benefit to in-river vs. transported fish. During this low flow year, steelhead may be the primary beneficiary of transportation.

Other TMT members weighed in and all said they preferred a 5/1 start time as a better approach: to take advantage of in river structural improvements and allow the fish to ride the natural wave of the hydrograph with the freshet coming in; given higher risks to hatchery steelhead straying; a concern for transportation impacts on wild Spring/Summer Chinook (transport appears to favor hatchery fish); and to have an additional data point for comparison by keeping a consistent start date as in recent years' past. Russ Kiefer, Idaho, offered a compromise proposal to try to meet several interests expressed today. Begin transportation at Lower Granite on 4/28 but wait and begin collection/transport at Little Goose on 5/3 and at Lower Monumental on 5/8. TMT members did not object to this approach and the action agencies suggested this was very likely a feasible approach from an operation and contract standpoint.

**Action/Planned Operation:** The Corps will plan to implement the compromise proposal, beginning collection at Lower Granite on 4/27 (transportation will begin on 4/28), at Little Goose on 5/3 and at Lower Monumental on 5/8. They will work with the District Corps to confirm the contract will allow for this approach, and will email TMT *only if* a different operation is needed. TMT will hear an update on this issue during their 5/1 TMT conference call.

### **Lower Monumental Performance Spill Test**

The FOP specifies there will be a performance test at Lower Monumental when Fall Chinook are predominantly passing the project. It also suggests this will happen during the Summer spill program which begins on 6/21 per the FCRPS BiOp. The salmon managers asked for clarification on the Corps' plan for the test this year. Dan Feil, Corps, said his agency will use the guidance described in the FOP:

“Summer Spill Operations Approximately June 21 through August 31: 17 kcfs 24 hours per day.  
Changes in Operations for Research Purposes:

- Research operations: Performance standard testing at 17 kcfs (summer) spill is planned to occur in 2013 at Lower Monumental Dam. Testing will begin in June and continue through mid-July. The dates of testing will be dependent on subyearling Chinook run timing and the size and availability of fish for tagging. Final dates for testing will be coordinated through the SRWG.
- Objectives of the biological test: The objectives of the test are to assess passage distribution and efficiency metrics, forebay retention and tailrace egress times, and dam survival for subyearling Chinook to determine if juvenile dam survival at 17 kcfs (summer) spill under the current project configuration meets or exceeds the juvenile dam survival performance standard for summer (93%) migrants specified in the 2010 Supplemental BiOp.”

Dan further clarified that this guidance could implicate an earlier start to the test than 6/21. Given this information, Oregon said they will likely object to the planned operation. The salmon managers said they will likely want to see different criteria used and will put together an alternative proposal for discussion at TMT. They acknowledged that this issue might need to be resolved at a higher policy level so will take steps now to ensure there is plenty of time for the issue to be discussed and resolved through the RIOG dispute resolution process if needed.

Everyone agreed on the need for a test that will produce valid and useful data for future planning and decision making; a legitimate process that allows for technical and policy considerations to be discussed and deliberated by all regional partners; and a clear decision that is understood by all (even if not agreed to by all!).

**Actions/Next Steps:**

- The salmon managers will develop an alternative proposal and share it for discussion at an upcoming TMT meeting – either 5/1 or 5/15. They will bring forward any data and other technical considerations that have already been discussed through SRWG and any new and relevant information that comes to bear on the issue.
- TMT members will notify their Senior Hydro Team and RIOG member representatives that this issue is pending and will need to be resolved in the near term. Paul will specifically ask Sr. Hydro Team Chair Ritchie Graves for a timeframe in which he might convene the team, and share that with the TMT representatives.

**Spring Creek Hatchery Release Update**

Dave Wills, USFWS, thanked all involved in supporting a successful Spring Creek hatchery release and passage operation. He reported that subyearling smolts experienced 1-9% mortalities before the test began, and less than 1-2% during the operation. The next release is scheduled for 5/2 and the USFWS will coordinate the specific operation with the Corps and BPA. TMT will hear an update at the 5/15 meeting.

### **Upper Snake Flow Augmentation**

John Roache, Reclamation, reported an estimate for Upper Snake flow augmentation this year. Reservoirs are not expected to fill so it is anticipated there will be 427 kaf released per the Nez Perce agreement. Of this, approximately 150 kcfs will come from Milner (to support spring migrants), 77 kcfs natural, 160 kcfs out of the Payette and 40-42 kcfs out of Boise (also in the spring). John will continue to update TMT as the season progresses and these estimates/actual flows shift.

### **Dworshak Operations**

Karl Kanbergs, Corps, provided an overview that the current end of month elevation target at Dworshak is 1568.5 feet. He turned it over to Steve Hall, Walla Walla District, to provide details on operations. Steve's graph showed the intersection between flood control and refill occurring around 5/14, with refill occurring in the second week of June based on the Corps plan to reduce flows to 5 kcfs today. However, they received an alternative proposal from NOAA yesterday recommending the project maintain at current full powerhouse for another week given the number of juvenile migrants that are presently in-river and the low springtime flows. The proposal suggests maintaining 10 kcfs outflow through May to the extent possible while still being able to meet refill of the project at the end of May. Paul Wagner, NOAA, added that the salmon managers would like to work with the action agencies to adaptively manage this operation on a weekly basis given the varying inflow forecasts. Signatories to the SOR were NOAA, Washington, Idaho and CRITFC. Dave Wills, USFWS, added his support for the SOR. Dave Statler, Nez Perce Tribe, raised a concern that we have not seen the freshet yet and there is uncertainty about how much 'peak' there will be this year. Given this and the desire to store enough cool water at Dworshak for later dry hot weather, he emphasized the need to proceed with caution. That said, he did not object to the proposal.

Steve Hall added that a maintenance issue will require one of the turbines at the project to be out of service for 1-2 days and reducing flows by 2.5 kcfs, but this will not likely happen for at least another week. To that end, he believed the proposed operation was feasible to implement for the next week.

**Action/Planned Operation:** The Corps planned to maintain full powerhouse outflows at Dworshak for the next week and revisit this operation with TMT during their 5/1 call, or sooner if needed based on changing forecasts or needs of the project repair work. Paul Wagner will revise the current SOR to include Walla Walla District as a recipient (currently it is Seattle District) and send it to the Corps for posting to the TMT page and sending out to the appropriate Corps recipients.

### **Libby/Albeni Falls ESP Traces**

Karl Kanbergs, Corps, shared a link to the NMFS RFC Libby ESP forecasts. This link will be included on the TMT web page under "Water Control Data" for anyone to access as they wish.

### **Operations Review**

Reservoirs – John Roache reported on Reclamation projects. Hungry Horse was releasing 10.6 kcfs and is forecasted to be below the end of month flood control elevation of 3532.6 feet. Grand Coulee was

targeting no higher than 1258.5 feet at the end of the month and will be at or below the 1258.5 flood control elevation until the start of refill. The project was releasing 154 kcfs on April 23 and currently at elevation 1263.6 feet. Lisa Wright, Corps, reported on projects. Libby was at elevation 2401.3 feet with 7.5 kcfs inflows and 4 kcfs outflows. Albeni Falls was at elevation 2055.6 feet with 35.7 kcfs inflows and 35.2 kcfs outflows. Dworshak was at elevation 1564.9 feet with 8 kcfs inflows and 9.9 kcfs outflows. Lower Granite average inflows were 49.8 kcfs; McNary inflows were 205.9 kcfs and Bonneville inflows were 225.8 kcfs.

Fish – Paul Wagner, NOAA, reported. Juvenile yearling Chinook counts at Lower Granite ranged 18,000-30,000/day; 15,000 at McNary; 20,000 at John Day and 16,000 at Bonneville. Steelhead counts at Lower Granite were 50,000-116,000/day and 30,000/day at Little Goose. Sockeye counts at McNary were 12,000. Lamprey at John Day ranged 500-1,300/day. Adult at Bonneville exceeded 1,000/day at Bonneville and passage was looking much later than 2012 and the 10-year average.

A question was asked about pinnipeds. The Corps said counts were low below Bonneville and that most of the action at this point was occurring lower than the dam. A predation report is posted to the TMT Documents page.

Water Quality – Scott English, Corps, reported that TDG was low in the system. The spill priority list expires on May 15 and the Corps did not currently plan to make any changes.

**Action:** The salmon managers will review the list and propose any changes at the next, 5/1 TMT meeting.

Power System – Nothing to report.

### **Next Meeting, 5/1 Conference Call**

Agenda items include:

- Dworshak Operations
- Transportation Operations
- (Tentative) Update on McNary Transportation SOR Decision
- (Tentative) Lower Monumental Spill Performance Test
- (As needed) Spill Priority List – recommended changes from FPAC

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

**April 24, 2013**

Notes: Pat Vivian

#### ***1. Introduction***

Today's TMT meeting was chaired by Karl Kanbergs, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of Washington, BOR, the Nez Perce Tribe, COE, BPA, NOAA, USFWS, Montana, CRITFC/Umatilla, Idaho, Oregon and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

Discussion of the 2013 Lower Monumental performance test was added to today's agenda at the request of Paul Wagner, NOAA.

#### ***2. Review of Meeting Minutes – April 3 and 10, 2013***

There were no comments on either the official minutes or facilitator's notes for these meetings. The minutes and notes can be considered final unless future concerns are raised.

#### ***3. McNary Transport SOR***

Wagner presented SOR 2013-1, which is similar to the McNary transport SOR presented to TMT last year. The SOR requests that fish not be transported at McNary for the 2013 summer migration season because in-river conditions have significantly improved for summer migrants since 2001-02, the most recent years for which data on transport vs. in-river survival are available. Last year's survival rate of 96.2% at the relocated McNary juvenile bypass outfall convinced the salmon managers that it's time to let summer migrants travel in river.

Signatories to the SOR include NOAA, USFWS, Oregon, Washington, Idaho, the Colville and Nez Perce tribes and CRITFC. Dan Feil, COE, asked about further tribal support for this SOR and Tom Lorz, CRITFC/Umatilla, replied that other Northwest tribes are letting CRITFC take the lead.

**Montana, BPA and BOR** voiced no objections at this time to implementing the SOR; however, the **COE** will examine the request from a policy standpoint and report back to TMT in accordance with the 2013 FOP, which says transport will be coordinated with fisheries managers at TMT.

#### ***4. Lower Snake River Transportation***

Wagner reported that yesterday FPAC had a lengthy debate over whether transportation on the Lower Snake River should begin now or on May 1, as it has for the

last few years. The annual role of TMT is to decide, based on in-river conditions, when to initiate transport at Lower Snake projects within the April 20-May 1 timeframe specified by the FOP. In recent years, transport has been started at Lower Granite on May 1, resulting in lower percentages of fish being transported. Last year the 50% passage date was April 27, so most fish had already passed by the time transport began.

From an implementation standpoint, April 28 is the soonest the COE could begin transport this year, Kanbergs told TMT. Wagner said NOAA recommended that transport begin earlier than May 1 at Lower Granite, but others weren't comfortable with that. The NOAA recommendation is based on a strategy of spreading the risk, advocated by the ISAB in light of uncertainty regarding the timing of transport. The ISAB has not identified specific dates for transport to begin. Smolt-to-adult return rates (SARs) typically peak in early May for smolts arriving at Bonneville from the Snake River. To ensure fish arrive at Bonneville by that time, NOAA's preference is to begin transport at Lower Granite on April 28. Transport at downstream Snake River projects would then begin up to four days later (May 2) at Little Goose Dam and up to seven days later (May 5) at Lower Monumental Dam, as defined in the 2013 Fish Operations Plan (FOP).

While transport benefits some species, it has potential negative effects such as increased straying rates of hatchery steelhead. Typically steelhead benefit from starting transport earlier than May 1, while the effects of transport on sockeye and lamprey are still uncertain. With flows on the Lower Snake River around 50 kcfs, probably 60% of downstream migrants are passing via the spillway and wouldn't be transported. Leaving such a high proportion of fish in the river helps to spread the risk.

Dave Statler, **Nez Perce Tribe**, advised taking advantage of natural flows this year as well as in-river improvements that have been made. David Wills, **USFWS**, expressed concern about disproportionate straying rates for transported hatchery steelhead in comparison to wild steelhead. For this reason USFWS would prefer to wait until April 31 or May 1 to begin transport. Tom Lorz said **CRITFC** would not object to beginning transport two days early but sees no reason to begin until May 1. Charles Morrill likewise said **Washington** would not object to an early start, but would prefer to start collection on April 30, with the first day of transport on May 1. Rick Kruger said he disagrees that steelhead benefit from starting transport in April. **Oregon** would not object to starting transport on April 28 but doesn't believe the data support this plan.

Russ Kiefer, **Idaho**, did not agree with an earlier start to transport at Little Goose and Lower Monumental, and proposed that transport at those projects begin on May 3 and May 8, respectively, consistent with previous years. Kiefer preferred May 1 as a start date for Lower Granite but would agree to an earlier date of April 28 if Little Goose and Lower Monumental do not start earlier than previous years. Wagner endorsed Kiefer's proposal.

The COE will consider this proposal to adjust transport start dates established in the FOP as a form of adaptive management, Dan Feil said. The COE will confirm that the start dates of April 28 at Lower Granite, May 3 at Little Goose (5 days later) and May 8 at Lower Monumental (10 days later) are fully in accordance with the FOP. Unless TMT hears otherwise from the COE, transport operations at Lower Snake River projects will begin on the following dates:

- Lower Granite – collect April 27, transport April 28
- Little Goose – collect May 2, transport May 3
- Lower Monumental – collect May 7, transport May 8

### **5. Lower Monumental Performance Standards Test**

The 2010 BiOp calls for initiating summer spill of 17 kcfs at Lower Monumental when fall Chinook predominate in the collection (>50%) for 3 consecutive days, Wagner recalled. The 2013 FOP says performance standard testing of the 17 kcfs summer operation at Lower Monumental will begin in June and continue through mid-July. The dates will be dependent on subyearling Chinook run-timing and the size and availability of fish for tagging, and will be determined through coordination with SRWG. The summer spill operation dates in the 2013 FOP are defined as approximately June 21-August 31, which is fast approaching.

Tom Lorz, CRITFC, asked what the COE's intentions are for this year's Lower Monumental operation. The COE wants to conduct a successful performance test of the summer spill operation, which requires tagging fish when they're in the river, Feil replied. The test of subyearling Chinook passage performance at Lower Monumental needs to occur during summer spill operations in order for data to be statistically significant. The FOP says dates of testing will depend on run-timing, size and availability of fish, so the COE plans to begin tagging fish and conducting the study when subyearling Chinook salmon arrive at Lower Monumental. That means testing could begin earlier than June 21.

Lower Monumental hasn't switched to the 17 kcfs summer spill operation earlier than June 20 since 2005, Lorz said. Wagner acknowledged there is dissent among regional fish managers over starting the summer operation earlier than June 21 for the sake of performance testing.

Charles Morrill, Washington, said the summer operation should begin as close as possible to the 95% passage date. Kiefer asked whether the subyearling Chinook salmon performance standard of 93% survival for the test was intended for the species or the spill operation; Wagner said he will follow up on this. Kruger said participants on yesterday's FPAC call were unanimous in opposing an earlier start date than June 20 for summer spill at Lower Monumental, and Oregon would object to it at both TMT and RIOG.

Over the next few weeks the fish managers will develop an alternative proposal as to when begin summer spill operations and performance standard testing at Lower

Monumental for the COE to review. TMT will revisit the Lower Monumental performance testing schedule at its May 15 meeting.

### ***6. Spring Creek Hatchery Release Update***

David Wills, USFWS, reported that the April hatchery release went very well. Subyearling smolt mortality at Bonneville ranged from 1-9% before the Spring Creek operation was initiated to minimize gatewell turbulence was initiated. This year mortality remained consistently under 2%.

The next Spring Creek hatchery release will occur on May 2. Wills will give a follow-up report at the May 15 TMT meeting.

### ***7. Upper Snake River Flow Augmentation***

John Roache, BOR, reported that this is been a dry year on the Snake River. Reservoirs are not expected to fill, but shortages are not expected either. The BOR estimates that 427 KAF of flow augmentation will be available on the upper Snake. Most of that will be powerhead, which means flow augmentation is limited to 427 KAF under the Nez Perce settlement. Current estimates of contributions from individual basins are:

- 150 KAF – Upper Snake basin above Milner
- 77 KAF – natural flows
- 160 KAF – Payette basin
- 75 KAF – Palisades basin
- 42 KAF – Boise basin

Roache will provide updates as the season progresses.

### ***8. Dworshak Operations***

Kanbergs and Steve Hall, COE Walla Walla, gave an update on Dworshak operations. The end of April flood control target is 1568.5 feet, which is higher than the refill elevation because lower inflows since April 15-16 have resulted in a slight draft of the pool. The COE at this point would typically reduce discharges to approximately 5 kcfs through the end of the month in order to reach the 1568.5 foot flood control elevation. However, if the operation intersects inflows as they drop below full powerhouse, or about 10 kcfs, that would mean refilling the reservoir by the second week of June. The COE therefore plans to draft the reservoir until inflows either exceed 10 kcfs or intersect the flood control refill curve, which represents a 95% confidence of refill. This is currently projected to occur around May 7. At that point outflows would be decreased.

Wagner introduced SOR 2013-2, which calls for maintaining 10 kcfs outflows at Dworshak, to be revisited on a weekly basis through May to the extent that 10 kcfs releases allow the project to refill by the end of June. Signatories to the SOR include

NOAA, Washington, Idaho and CRITFC. Wills, who didn't participate in crafting the SOR, said USFWS supports the recommendation at least until the next inflow forecast is available. The next official forecast will be released on May 7.

Dave Statler, Nez Perce, advocated supporting the natural peak of the freshet in a year like this, when use of Dworshak water for temperature control could have significant bearing on passage conditions late in the season. He advised the action agencies to proceed with caution.

Kanbergs agreed this begs the question of whether an operation between full powerhouse and 5 kcfs would be acceptable. Would it be preferable to cut outflows to 7.5 kcfs and return to full powerhouse by May 1-2? The BiOp says the Dworshak elevation should be near the FCRC in April, but continuing the current operation would result in a lower elevation than that.

The first transformer bank to the 115 kV line out of Dworshak needs to be replaced soon, Hall reported. This will take unit 1 out of service for a few days and limit discharges to about 7.5 kcfs. With this in mind, the COE will continue to operate the project at full powerhouse or approximately 10 kcfs outflows for another week as the SOR requests, unless the transformer replacement requires a reduction to 7.5 kcfs. TMT will revisit Dworshak operations in its April 30 conference call.

### ***9. Libby and Albeni Falls ESP Traces Website***

Kanbergs showed TMT this new website, which provides updated whisker plots of 25%, 50% and 75% probability ESP traces for Libby and Albeni Falls on an ongoing basis. Full pool elevation for Libby is currently 2459 feet unless Libby is surcharged for flood purposes under special agreement with Canada. The current ESP forecast shows Libby filling to about 6 feet below full pool. Kanbergs said Libby will follow established ramp rates, which means it might not fill exactly as depicted in the graphs.

### ***10. Operations Review***

**a. Reservoirs.** Hungry Horse is releasing 10.6 kcfs, including 1 kcfs spill. The end of month flood control elevation is 3532.6 feet. The project will go to VARQ outflows on May 1, estimated at 6.5-7.5 kcfs. The April final forecast is 103% of average, with precipitation and snowpack at 114% of average.

Grand Coulee is at elevation 1265.3 feet, with an end of month flood control elevation of 1258.5 feet. The project is drafting heavily, releasing 154 kcfs. Libby is at elevation 2401.3 feet, with inflows of 7.5 kcfs and releases of 4 kcfs. Albeni Falls is at elevation 2055.6 feet, with inflows of 35.7 kcfs and releases of 35.2 kcfs. Dworshak is at elevation 1564.9 feet, with inflows of 8 kcfs and releases of 9.9 kcfs.

McNary daily average inflows are 205.9 kcfs. Bonneville daily average inflows are 225.8 kcfs. Lower Granite daily average inflows are 49.8 kcfs.

**b. Fish. Adults:** Daily passage counts of spring chinook are now more than 1,000 per day at Bonneville, with a count of 5,400 fish to date, Wagner reported. This year's return is below the 10 year average. Lorz reported that adult passage is expected to be late this year, possibly even later than in 2006. Since installation of the lamprey flume at the Bonneville north shore ladder, CRITFC has been monitoring adult passage because it appears that lower numbers of fish have been using the ladder since the flume was installed.

**Juveniles:** Daily passage counts of spring chinook are approximately 15,000 at McNary, 20,000 at John Day and 16,000 at Bonneville. Daily passage counts for steelhead are 116,000 at Dworshak and 30,000 at Little Goose. There is not much steelhead movement yet in the lower river. Sockeye passage has been picking up at McNary. Lamprey passage at John Day recently peaked at 1200.

**c. Water Quality.** All gages are working and TDG levels are generally low, Scott English, COE, reported. The current spill priority list expires on May 15, and the COE doesn't plan to change it unless the salmon managers request a change.

**d. Power System.** There was nothing to report today.

## **6. Next TMT Meeting**

There will be a TMT conference call April 30 to follow up on Dworshak and McNary operations, and possibly criteria for the Lower Monumental performance standards test. The next regular TMT meeting will be May 15.

<b>Name</b>	<b>Affiliation</b>
John Roache	BOR
Charles Morrill	Washington
Dave Statler	Nez Perce
Lisa Wright	COE
Scott Bettin	BPA
Paul Wagner	NOAA
David Wills	USFWS
Jim Litchfield	Montana
Dan Feil	COE
Laura Hamilton	COE
Bill Proctor	COE
Tom Lorz	CRITFC/Umatilla
Scott English	COE

**Phone:**

Russ Kiefer	Idaho
Rick Kruger	Oregon
Eric Van Dyke	Oregon

Steve Hall	COE Walla Walla
Heather Dohan	Puget
XX	PPL
Shane Scott	PPL
Peter Richardson	Jenscape
Margaret Filardo	FPC
Barry Espenson	CBB
Tim Baldwin	Energy GPS
Don Tinker	SCL
Richelle Beck	Grant PUD
Michael Landau	Snohomish
XX	Douglas PUD
Brian Marotz	Montana

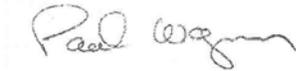
## SYSTEM OPERATIONAL REQUEST: #2013-01

*The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: National Marine Fisheries Service, US Fish and Wildlife Service, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Idaho Department of Fish and Game, the Colville Tribes, the Nez Perce Tribes, and the Columbia River Inter-Tribal Fish Commission.*

**TO:**

<b>Gen. Anthony Funkhouser</b>	<b>COE-NWD</b>
<b>Col. John Eisenhauer</b>	<b>COE-NWD</b>
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<b>Col. Bruce A. Estok</b>	<b>COE-Seattle District</b>
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<b>Steve Oliver</b>	<b>BPA-PG-5</b>
<b>Lori Bodi</b>	<b>BPA-KE-4</b>

**FROM:** Paul Wagner, FPAC Chair



**DATE:** April 23, 2013

**SUBJECT:** 2013 McNary Dam Summer Transport Operations

**OBJECTIVE:** Do not initiate summer transport operations at McNary Dam.

**SPECIFICATIONS:** Do not initiate summer transport from McNary Dam over migration year 2013.

**JUSTIFICATION:**

With regard to summer transportation at McNary Dam, the 2013 Fish Operations Plan (FOP) states:

“Transportation will be initiated at McNary Dam between July 15–30 per the 2010 Supplemental BiOp (RPA 30, Table 4) and in coordination with NOAA Fisheries and the TMT. Fish will be transported from McNary Dam by barge through August 16, then transported by truck every other day. All fish collected will be transported except those

marked for in-river studies. Fish are expected to be transported through September 30. The presence of factors such as excess shad, algae or bryozoans that can clog screens and flumes may result in discontinuing transport operations at McNary Dam before September 30. Detailed criteria for McNary transport are contained in the FPP, Appendix B.

Transportation operations may be adjusted for research purposes, due to conditions at the collection facilities, or as a result of the adaptive management process (to better match juvenile outmigration timing and/or to achieve or maintain performance standards). If new information indicates that modifying (or eliminating) transportation operations at McNary Dam is warranted, adaptive management will be used to make appropriate adjustments through coordination with the FPOM/TMT.”

The Salmon Managers recommend eliminating summer transport operations at McNary Dam in 2013. The most recent data on McNary summer transport is from the years 2001 and 2002. That data indicated a transport to inriver benefit ranging from 1.2 to 1.5 could occur during the mid-July to mid-August timeframe. Substantial improvements have been made to the McNary project and the projects down river which has resulted in increased survival at the projects as well as likely increases in reach survivals for inriver migrants which would reduce the transport benefit observed in those years. List of Improvements since 2002:

**McNary Dam:**

- 24 hours spill
- Relocated bypass outfall

**John Day Dam:**

- Top spill weirs
- Improved spill patterns
- Improved avian wire array
- 24 hours spill

**The Dalles Dam:**

- Spillway wall and associated improved spill patterns
- Improved ice and trash sluiceway chain gate opening patterns
- Improved avian wire arrays

**Bonneville Dam:**

- Second Powerhouse corner collector (surface bypass)
- Improved spill patterns (increased minimum openings)
- Increased spill volume
- Finished minimum gap runners at the First Powerhouse
- Improved ice and trash sluiceway flow, gate pattern and gate operation
- Filled holes and removed obstructions in spillway

**System:**

- Increased incentives and scope of Pikeminnow sport harvest reward program

In past years, the Region has maintained summer transport at McNary Dam primarily because of poor bypass performance at this project. However, in 2012, a new juvenile outfall was constructed at the McNary project that has improved survival at this project. Subyearling Chinook bypass survival was estimated at 94.6% in a single release study, which is a significant improvement over past years bypass survival (which ranged from 84.5% to 92.1%). The 2012 estimate was achieved despite high avian presence early in the subyearling migration season.

From a project safety perspective, there is a risk to the outfall if there is a problem with a barge operating in the relatively high flow and velocity conditions below this project. Eliminating summer transport would eliminate this risk. Current interruptions in spill and changes in the spill pattern required for the barge to dock at the juvenile facility (that do not favor fish passage) would also be eliminated.

The signatories to this SOR believe that, based on the improvements at McNary, John Day, The Dalles and Bonneville, the 96.2 % survival estimate for sub yearling chinook through the new McNary outfall, and the ongoing intensive sport reward harvest for northern Pikeminnow, that neither barge nor truck transport from McNary should be initiated in 2013.

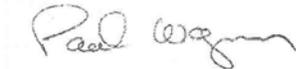
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<b>Col. John Eisenhauer</b>	<b>COE-NWD</b>
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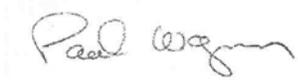
## SYSTEM OPERATIONAL REQUEST: #2013-2 DRAFT

*The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: National Marine Fisheries Service, Washington Department of Fish and Wildlife, Idaho Department of Fish and Game, and the Columbia River Inter-Tribal Fish Commission.*

**TO:**

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<b>Col. John Eisenhauer</b>	<b>COE-NWD</b>
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<b>Steve Oliver</b>	<b>BPA-PG-5</b>
<b>Lori Bodi</b>	<b>BPA-KE-4</b>

**FROM:** Paul Wagner, FPAC Chair



**DATE:** April 23, 2013

**SUBJECT:** Dworshak Dam Flow

**SPECIFICATIONS:** Maintain a release 10 Kcfs (full powerhouse) from Dworshak Dam.

**JUSTIFICATION:** Presently releases from Dworshak Dam are 10 Kcfs. The US Army Corps of Engineers has advised that they will decrease the releases at Dworshak in order to meet the end of April flood control target of 1568.5 ft. Given the number of juvenile migrants that are presently in-river and the low springtime flows, we request the Corps to maintain the 10 Kcfs outflow from Dworshak, and continue through May to the extent the 10 Kcfs discharge allows refill of the project by the end of June.

A combined 8.2 million tule fall Chinook from Spring Creek National Fish Hatchery (6.4 million) and Little White Salmon NFH (1.8 million) were released on April 11 and arrived at BON on April 12, approximately 15 hours after release with significant numbers passing within one hour after the initial arrival. From April 12-20, PH2 units were operated within the middle of the 1% efficiency range (mid-range) at a flow of 13-15 kcfs, targeting 14 kcfs. PSMFC personnel reported that daily average mortality rates ranged from zero to 1.8% for five days after the initial arrivals, and descaling was negligible.

SAMPLE		All CHO				Spring Creek CHO (data from SMP daily emails)				Comments	
Start Date, Time	End Date, Time	BON Passage Index	Sample #	Morts #	Morts %	Desc %	Sample #	Morts #	Morts %		Desc %
Wed 4/10 07:00	Thu 4/11 07:00	1,143	104	3	2.9%	0.0%	n/a (not yet released)				Thu 4/11, from 8-10 am: Spring Creek fish released
Thu 4/11 07:00	Fri 4/12 07:00	771,897	2,042	19	0.9%	0.0%	2,016	17	0.8%	negligible	First arrival of Spring Creek fish at BON JFF ~15-17 hours after release; <b>Special PH2 op begins</b>
Fri 4/12 07:00	Sat 4/13 07:00	269,748	695	12	1.7%	0.0%	818	17	2.1%	0.0%	"Passage is going extremely well with low mortality and virtually no descaling."
Sat 4/13 07:00	Sun 4/14 07:00	63,431	255	4	1.6%	0.0%	252	4	1.6%	0.0%	
Sun 4/14 07:00	Mon 4/15 07:00	27,663	291	5	1.7%	0.0%	284	5	1.8%	0.0%	
Mon 4/15 07:00	Tue 4/16 07:00	38,001	418	7	1.7%	0.3%	406	7	1.7%	0.0%	"Spring Creek estimated JBS passage increased from ~10,000 yesterday to >13,000 today."
Tue 4/16 07:00	Wed 4/17 07:00	17,096	188	0	0.0%	0.0%	186	0	0.0%	0.0%	"Numbers dwindling rapidly; vast majority of Spring Creek fish have passed. <b>Final update.</b> "
Wed 4/17 07:00	Thu 4/18 07:00	12,695	154	1	0.6%	0.0%					
Thu 4/18 07:00	Fri 4/19 07:00	8,417	108	1	0.9%	0.0%					
Fri 4/19 07:00	Sat 4/20 07:00	4,399	59	0	0.0%	0.0%					
Sat 4/20 07:00	Sun 4/21 07:00	6,305	113	0	0.0%	0.0%					<b>Special PH2 turbine operation ended Sat, 4/20, at 23:00 hours (~8.5 days after release)</b>
Sun 4/21 07:00	Mon 4/22 07:00	4,652	62	0	0.0%	1.7%					
Mon 4/22 07:00	Tue 4/23 07:00	3,597	45	0	0.0%	0.0%					
<b>TOTAL</b>		<b>1,229,044</b>	<b>4,534</b>	<b>52</b>	<b>1.1%</b>	<b>0.2%</b>	<b>3,962</b>	<b>50</b>	<b>1.3%</b>	<b>0.0%</b>	

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane      **BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**NOAA-F:** Paul Wagner / Richard Dominique      **USFWS:** David Wills / Steve Haeseker  
**OR:** Rick Kruger / Erick Van Dyke      **ID:** Russ Kiefer / Pete Hassemer  
**WDFW:** Charles Morrill      **MT:** Jim Litchfield / Brian Marotz  
**Kootenai:** Sue Ireland / Billy Barquin      **Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Colville:** Sheri Sears / Keith Wolf      **Nez Perce:** Dave Statler  
**Umatilla:** Tom Lorz (CRITFC)  
**COE:** Doug Baus / Karl Kanbergs

## TMT CONFERENCE CALL

May 1, 2013 9:00am - 12:00pm

### CONFERENCE CALL INFORMATION

Phone Number (877) 336-1274

Access Code 3871669

Security Code 9641

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnnv.net](mailto:rgumpert@cnnv.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

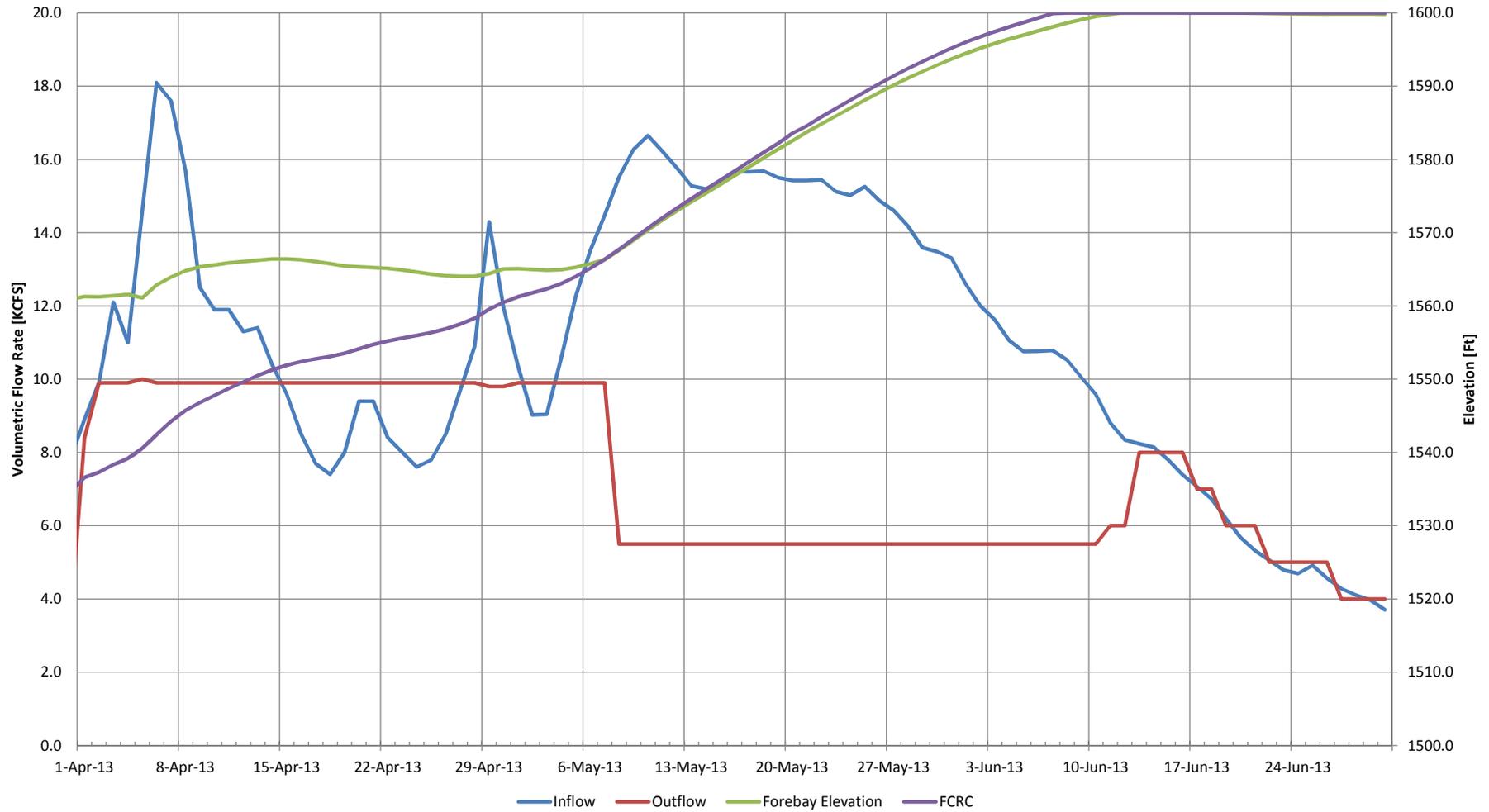
## AGENDA

1. Welcome and Introductions
2. Dworshak Operations - Karl Kanbergs, COE-NWD; Steve Hall, COE-NWW
  - a. [DWR Operations](#)
3. Lower Snake River Transport Status Update - Lisa Wright, COE-NWD
4. Spill Priority List for May 15-June 20 - Doug Baus, COE-NWD
  - a. [Spill Priority List, May 15-June 20](#)
5. Other
  - a. Set agenda and date for next meeting - **May 8, 2013**
  - b. [\[Calendar 2013\]](#)

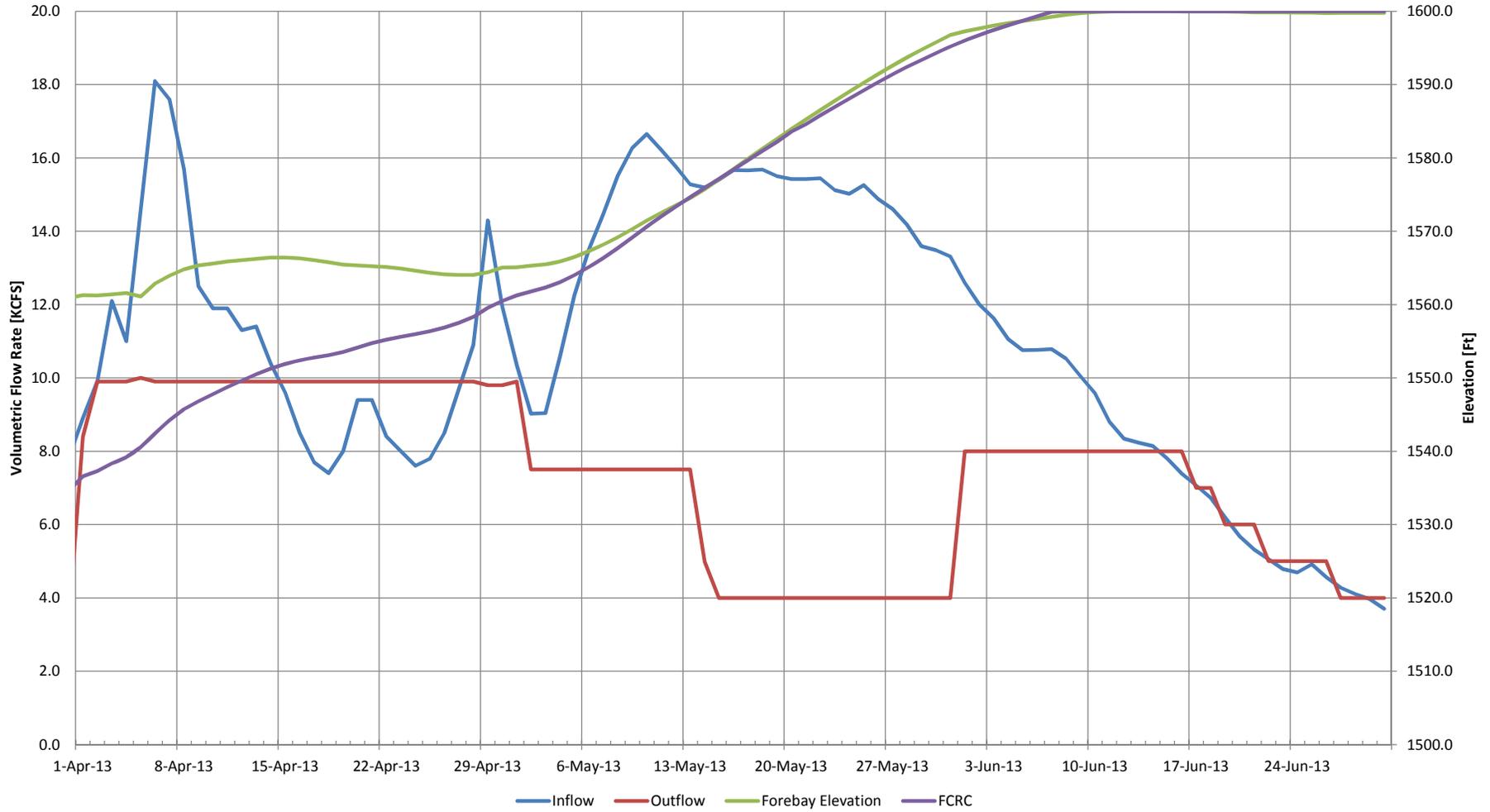
*Questions about the meeting may be referred to:*

[Doug Baus](#) at (503) 808-3995

### DWR Regulation to fill by 1 July 2013 using STP Inflows



### DWR Regulation to fill by 1 July 2013 Statler Request using STP Inflows



# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 1, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Dworshak Operations**

Paul Wagner, NOAA, reported a consensus recommendation of the salmon managers at FPAC to continue with full powerhouse outflows at Dworshak for another week. Subsequent to that discussion, Dave Statler, Nez Perce Tribe, had sent an email requesting TMT consider reducing to 7.5 kcfs as soon as possible given his impression that the freshet had arrived and with an objective of refill in June for summer operations. Russ Kiefer, Idaho, said he had a discussion with Dave yesterday and his understanding was that he was more comfortable with the salmon managers' recommendation after their discussion. He heard Dave's highest priority is refill in June, and that he also would like to avoid the need to run the project at 'bare minimums' in late June in order to meet refill.

Steve Hall, Walla Walla Corps, presented the two operation scenarios in modeled graphs. The first, with the full powerhouse for another week, would intercept the refill curve on 5/7, initiating a reduced flow at that time to 5.5 kcfs through May and in to early June. Once the project approaches full, discharges would increase for the rest of the month. Steve noted the shape of runoff is based on current STP forecasts and is subject to change. He also said the inflow trace shown is slightly higher than the official water supply forecast for April-July runoff volume. The second graph modeled the 'Statler' request reducing outflows to 7.5 kcfs on 5/2 and holding there until about 5/13 at which time the refill curve is intercepted. The project would then go to 4 kcfs through the end of May and back up to about 8 kcfs for June until the reservoir refills. June could be shaped a bit.

Karl Kanbergs, Corps, pointed out that the Statler approach shows a risk to exceeding the flood control elevation until 5/10, so the Corps would prefer to implement the first scenario of maintaining full powerhouse for another week. Steve said a snow flight will be done in late May to determine snow pack and expected runoff. The modeled projections showed refill earlier than in higher water years. This could provide additional operating flexibility later in June for potential river temperature flow augmentation.

Charles Morrill, Washington, asked a question about the Lower Granite hydrograph. The NWRFC site showed flows receding at Lower Granite over the next few days from about 65 kcfs to about 55 kcfs; then back up around 5/5 driven by runoff from the warm weather, and going up to about 82 kcfs by 5/10. Russ Kiefer said this information supported the recommendation to maintain flows for another week. TMT members present on the call (Washington, Oregon, Idaho, Montana, NOAA, USFWS,

Umatilla, Colvilles, BPA, Reclamation and the Corps) concurred and/or did not object to the salmon managers' recommendation to maintain full powerhouse for another week. After further discussion, they agreed on an interim step down to 7.5 kcfs on 5/7 and a check in on 5/8 to determine next steps in the operation.

**Planned Operation:** Given today's discussion, the Corps will continue full powerhouse through 5/7, then drop flows on 5/8 to 7.5 kcfs. TMT will hold a conference call to discuss whether to reduce flows further to 5.5 kcfs on 5/9 given current conditions and forecasts at that time. Paul Wagner said he would follow up with Dave Statler after today's call.

### **Lower Snake Transport Status Update**

Lisa Wright, Corps, updated TMT that, per discussions and agreement at TMT, the Corps began barging fish from Lower Granite on 4/28; will begin collection at Little Goose on 5/2 and transportation on 5/3; and will begin collection at Lower Monumental on 5/7 and transportation on 5/8.

### **Spill Priority List for May 15-June 20**

The Salmon Managers had a chance to review the list and suggested no changes at this time. The list that was linked to today's agenda item will be the list used for the time period May 15-June 20. Russ Kiefer, Idaho, noted that with the low flow year, FPAC may recommend a change to move Lower Granite down the list if the salmon managers believe transportation will likely return more adults (this change would allow more fish to be collected at that project).

### **Next Meeting, May 8 conference call and May 15 face to face**

Agenda items include:

- (May 8 and 15) Dworshak Operations
- (May 15) Action Agency Response to SOR for McNary Summer Transportation
- (May 15) Spring Creek Hatchery Release Summary
- (May 15) Reclamation Upper Snake Flow Augmentation Status Update
- (May 15) Vernita Bar Update
- (May 8 and/or May 15) Libby Operations – Sturgeon Pulse SOR
- Other?

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

May 1, 2013

Notes: Pat Vivian

#### **1. Introduction**

Today's TMT conference call was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of USFWS, Idaho, Oregon, CRITFC/Umatilla Tribe, NOAA, COE, BPA, BOR, the Colville Tribe and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### **2. Dworshak Operations Update**

The FPAC consensus recommendation yesterday was to continue full powerhouse (approximately 10 kcfs) outflows from Dworshak Dam, Paul Wagner, NOAA, reported. Since the FPAC call Dave Statler, Nez Perce Tribe, who was not present on that call or today, voiced a preference for 7.5 kcfs outflows to follow the shape of the freshet this year and preserve water for late June.

Steve Hall, COE Walla Walla, presented two graphs linked to today's agenda that depict the two proposed Dworshak operations. The first graph shows the full powerhouse (10 kcfs) operation continuing until it intercepts the flood control refill curve on approximately May 7. Then releases drop to an estimated refill flow of 5.5 kcfs for the remainder of May and the first part of June. Then, discharges will be increased as the reservoir approaches full. The shape of this runoff is based on STP projections and is, of course, subject to change.

The second graph depicts Statler's request to drop Dworshak outflows to 7.5 kcfs now through May 13 when the project is likely to intercept the FCRC. At that point, outflows would drop to 4 kcfs through the end of May and rise to an estimated 8 kcfs through June.

Because this scenario includes the possibility of exceeding the flood control elevation prior to refill, the 10 kcfs recommendation is the desired operation, Karl Kanbergs, COE, said. Hall confirmed that under Statler's request, on May 10 the reservoir elevation would be about 2 feet above the flood control elevation. Typically the COE tries to top off the project shortly after inflows fall below full powerhouse releases. Furthermore, the COE operates to a snow covered area criteria that involves a flight in late May to verify the amount of snow remaining in the basin. These two criteria will guide the refill process. As both of these graphs show, Dworshak will refill much earlier than usual this year in response to low inflows.

Russ Kiefer, Idaho, said he and Statler discussed Dworshak operations after the FPAC call. While not authorized to represent Statler, Kiefer said he believed that 10 kcfs would be acceptable; Wagner will follow up with Statler on this. Kiefer said he and

Statler agreed that more smolts are probably migrating now than in late June, thus the benefits of releases now are greater.

Charles Morrill, Washington, asked about the projected hydrograph at Lower Granite between now and May 7-10. According to current STP projections, the project should operate at full powerhouse through May 15, which is longer than the COE's refill curve suggests, Hall said. According to NWRFC projections, over the next two days flows at Lower Granite will recede from the mid-60 kcfs range to the mid-50 kcfs range, Kanbergs noted.

Morrill advocated keeping outflows at 10 kcfs for now; Kiefer and Wagner supported that operation. Kanbergs said the COE would agree to it because it conforms to flood control requirements.

Wagner made an alternative suggestion for Dworshak operations: 10 kcfs outflows through May 7, dropping down to 7.5 kcfs on May 8 with a tentative plan to drop outflows to 5 kcfs or possibly continue 7.5 kcfs until inflows pick up. **Washington, the Colville Tribe, Idaho, USFWS, Montana, CRITFC/Umatilla Tribe, Oregon, BOR, BPA and the COE** all concurred with **NOAA's** suggestion. TMT will decide in a May 8 conference call whether to reduce outflows to 5 kcfs or continue 7.5 kcfs releases.

### ***3. Lower Snake River Transport Status Update***

Based on TMT's discussion last week, the COE began fish collection on April 27 and barging at Lower Granite on April 28, Lisa Wright, COE, reported. At Little Goose, barging will begin on May 3, and at Lower Monumental on May 8, with collection at each dam starting the day before barging. There were no questions today regarding this operation.

### ***4. Spill Priority List for May 15-June 30***

The salmon managers made a consensus recommendation to adopt the proposed list, which is the same as the list currently in effect, Wagner reported. Kiefer said there might be a recommendation in future to move Lower Granite further down the list if conditions indicate that transporting fish will return more adults. If that happens, the salmon managers will raise the issue at TMT. The list attached to today's agenda will go into effect on May 15.

### ***5. Next TMT Meeting***

TMT will meet next in a conference call on May 8 and in person on May 15. The May 8 discussion will include Dworshak operations and, at the suggestion of Charles Morrill, a comparison of historical run timing in 2007 and this year, which has similar flows.

The May 15 TMT agenda will include the SOR presented last week regarding McNary summer transport, an update on the May Spring Creek Hatchery release, upper Snake flow augmentation, the Hanford Reach protection program and possibly a sturgeon pulse SOR for Libby.

<b><i>Name</i></b>	<b><i>Affiliation</i></b>
David Wills	USFWS
Russ Kiefer	Idaho
Rick Kruger	Oregon
Eric Van Dyke	Oregon
Tom Lorz	CRITFC/Umatilla
Jim Litchfield	Montana
Paul Wagner	NOAA
Doug Baus	COE
Karl Kanbergs	COE
Tony Norris	BPA
John Roache	BOR
Agnes Lut	BPA
Heather Dohan	Puget
Shane Scott	PPC
Steve Hall	COE
Dave Benner	FPC
Margaret Filardo	FPC
Russ George	WMC
Richelle Beck	Grant PUD
Kim Johnson	COE
Don Tinker	SCL
Ruth Burris	PGE
Lisa Wright	COE
Charles Morrill	Washington
Sheri Sears	Colville Tribe
Barry Espenson	CBB
Christine Engmann	Cargill
Scott Bettin	BPA
Bill Proctor	COE

### SPILL PRIORITY LIST Effective May 15 – June 20, 2013

If necessary to spill above FOP spill rates, the Action Agencies will incrementally increase spill at projects in the following priority order. This order is intended to manage TDG on a system-wide basis while prioritizing extra spill in a manner that provides the most benefit to fish passage. *The order of the eleven projects below may be adaptively managed in-season based on TMT feedback and recommendations.*

Level	Priority Order	Project	TDG %	Spill Cap Estimate (kcfs)
LEVEL 1 – up to State TDG Standards <sup>1</sup>	01	LWG	120/115%	41
	02	LGS	120/115%	40
	03	LMN	120/115%	31
	04	IHR	120/115%	95 night / 75 day
	05	MCN	120/115%	175
	06	JDA	120/115%	146
	07	TDA	120/115%	135
	08	BON	120/115%	100
	09	CHJ	110%	25
	10	GCL	110%	0 (OT) or 30 (DG) <sup>2</sup>
	11	DWR	110%	30% of total river flow
LEVEL 2 – removes downstream forebay restriction	12	LWG	120%	45
	13	LGS	120%	52
	14	LMN	120%	44
	15	IHR	120%	95 night / 75 day
	16	MCN	120%	175
	17	JDA	120%	146
	18	TDA	120%	135
	19	BON	120%	120
	20	CHJ	120% <sup>3</sup>	60
LEVEL 3	21	LWG	122%	52
	22	LGS	122%	59
	23	LMN	122%	60
	24	IHR	122%	95 night / 85 day
	25	MCN	122%	185
	26	JDA	122%	177
	27	TDA	122%	160
	28	BON	122%	150
	29	CHJ	120%	115
	30	GCL	115%	5 (OT) or 40 (DG)
LEVEL 4	31	LWG	125%	63
	32	LGS	125%	70
	33	LMN	125%	80
	34	IHR	125%	110
	35	MCN	125%	230
	36	JDA	125%	190

Level	Priority Order	Project	TDG %	Spill Cap Estimate (kcfs)
	37	TDA	125%	269
	38	BON	125%	215
	39	CHJ	122%	160
	40	GCL	120%	15 (OT) or 50 (DG)
LEVEL 5	41	LWG	127%	85
	42	LGS	127%	95
	43	LMN	127%	120
	44	IHR	127%	124
	45	MCN	127%	280
	46	JDA	127%	206
	47	TDA	127%	294
	48	BON	127%	234
	49	CHJ	125%	190
	50	GCL	122%	20 (OT) or 60 (DG)
LEVEL 6	51	LWG	130%	90
	52	LGS	130%	125
	53	LMN	130%	180
	54	IHR	130%	145
	55	MCN	130%	321
	56	JDA	130%	250
	57	TDA	130%	360
	58	BON	130%	250
	59	CHJ	127%	250
	60	GCL	125%	25 (OT) or 80 (DG)
	LEVEL 7	61	LWG	135%
62		LGS	135%	177
63		LMN	135%	250
64		IHR	135%	240
65		MCN	135%	375
66		JDA	135%	300
67		TDA	135%	400
68		BON	135%	300
69		CHJ	130%	280
70		GCL	130%	42 (OT) or 120 (DG)

1. During Fish Passage Season (Apr 1–Aug 31), state TDG standards are  $\leq 120\%$  in the tailrace or  $\leq 115\%$  at the next downstream forebay (whichever is more restrictive) for the eight Lower Snake and Lower Columbia fish passage projects, and  $\leq 110\%$  at all other projects.

2. Spill at GCL is either through outlet tubes (OT) or drum gates (DG), depending on reservoir elevation. Spill through OT produces more TDG. Spill transitions to drum gates at forebay elevation of 1267-1270 feet.

3. CHJ Level 2 spill shaped to 115% in the Wells Dam forebay, up to 120% in the CHJ tailrace, depending on anticipated duration.

## **SYSTEM OPERATIONAL REQUEST: FWS #1**

**TO:**

<b>Gen Anthony Funkhouser</b>	<b>COE-NWD</b>
<b>Jim Barton</b>	<b>COE-Water Management</b>
<b>Doug Baus</b>	<b>COE-RCC</b>
<b>David Ponganis</b>	<b>COE-PDD</b>
<b>Col. Bruce Estok</b>	<b>COE-Seattle District</b>
<b>Lorri Lee</b>	<b>USBR-Boise Regional Director</b>
<b>Bill Drummond</b>	<b>BPA-Administrator</b>
<b>Steve Oliver</b>	<b>BPA-PG-5</b>
<b>Lorri Bodi</b>	<b>BPA-KE-4</b>

**FROM:** Brian Kelly, State Supervisor, U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, on behalf of the Libby BO Policy Group

**DATE:** May 8, 2013

**SUBJECT:** 2013 Libby Dam Releases for Sturgeon and Bull Trout Augmentation Flows

### **SPECIFICATIONS:**

Based on the U.S. Fish and Wildlife Service's (Service) February 2006 Biological Opinion (2006 BO) on operations of Libby Dam, and the May final April-August volume runoff forecast of 6.535 million acre-feet, we are within a Tier 3 operations year for Kootenai River white sturgeon. The minimum recommended release volume for sturgeon conservation in a Tier 3 year is 1.14 million acre-feet and we recommend the following procedures for discharge of at least this minimum volume from Libby Dam:

The precise means that will be utilized to meet these objectives are largely dependent on real-time conditions and in-season management. It is not possible to develop a single definitive recommendation for a sturgeon operation at this time due to the uncertainties in the forecast, and shape and volume of inflow. Given these uncertainties, the Service has developed the following guidelines for sturgeon operations in 2013:

- The 2013 sturgeon operations at Libby Dam will consist of two periods of peak flows.
- Begin sturgeon augmentation flow for the first peak when the Regional Team of Biologists determines that local tributary run-off downstream of Libby Dam is peaking.

- Increase discharge (according to ramping rates in 2006 BO) from Libby Dam up to full powerhouse capacity, depending on local conditions, e.g. river stage at Bonners Ferry.
- Maintain peak discharge (20,000-25,000 cubic feet per second (cfs)) for a period of 5-7 days.
- Selective withdrawal gates at Libby Dam above elevation 2,326 mean sea level will remain uninstalled during this peak, allowing for conservation of warmer surface water that will be targeted for release during the descending limb of the second peak, described below.
- After 5-7 days of peak discharge, decrease discharge at Libby Dam (according to ramping rates in 2006 BO) to a discharge that is sufficient to maintain a flow of at least 18,000 cfs at Bonners Ferry until commencement of the second peak.
- Increase discharge (according to ramping rates in 2006 BO) from Libby Dam up to full powerhouse capacity when the Regional Team of Biologists determines that the high-elevation run-off in the Kootenai Basin has begun. Actual peak discharge during this second peak will depend on local conditions (i.e. river stage at Bonners Ferry).
- Selective withdrawal gates at Libby Dam above elevation 2,326 mean sea level will be placed to within 30' of the surface of the reservoir prior to the end of the second peak, described above, allowing for release of warmer surface water as the receding limb of the hydrograph commences. Release of warmer water from Libby Dam, in combination with lower volume of release, will allow the Kootenai River temperature to increase to appropriate spawning temperatures at Bonners Ferry (8-10°C) during the receding limb of the hydrograph.
- Maintain peak discharge for a period of 7-9 days.
- After 7-9 days of peak discharge, and until the sturgeon volume is exhausted, decrease discharge at Libby Dam towards stable summer flows, to no less than bull trout minimum flows (8,000 cfs in Tier 3).
- Total number of days at peak discharge will depend on real time conditions and the shape of the inflow hydrographs.

As always, flood risk reduction operations supersede sturgeon flow augmentation, and dam managers will coordinate operations with regional sturgeon managers.

Sturgeon augmentation discharge may be extended for additional days if the Corps elects to provide volume in excess of the minimum volume requirement in the 2006 BO and to control the refill rate of Libby Dam.

Provide stable or gradually declining discharge through the end of September following ramping rates and minimum flow guidelines in the 2006 BO for bull trout and white sturgeon.

Additional recommendations may be provided as water supply forecasts are updated.

**JUSTIFICATION:**

A continued effort is needed to provide spawning and incubation flows to meet habitat attributes for depth, velocity and temperature in the Kootenai River as defined in the 2008 BO Clarified Reasonable and Prudent Alternative (RPA) for Kootenai River white sturgeon (Table 1). The clarified RPA states that if 2008 and 2009 sturgeon operations at Libby Dam are determined to be “not successful”, the action agencies (the Corps and BPA) will operate Libby Dam in 2010 through 2012 to provide additional flows by spilling in excess of powerhouse capacity consistent with a waiver of the Total Dissolved Gas (TDG) water quality standard provided by the State of Montana. The Service issued its determination of “not successful” for 2008 sturgeon operations on April 20, 2009, and issued a “not successful” determination for 2009 operations on December 16, 2009, thus triggering the action agencies to implement provisions to provide flows in excess of powerhouse capacity (i.e. spill) in operating years 2010 through 2012. Telemetry data for spawning Kootenai sturgeon females from 2010-2012 indicate that the spill tests did not facilitate a change in Kootenai sturgeon spawning and migration behaviors. Given the results from 2008-2012 sturgeon operations at Libby Dam, a different approach to managing the sturgeon volume is warranted.

The objective of the 2013 sturgeon augmentation operation described in this SOR is to provide two periods of peak river stages/flows during the spring run-off period. The first peak, timed to low-elevation run-off below Libby Dam, is intended to provide sturgeon cues to begin upstream migration and staging. The second peak, timed to high-elevation run-off above Libby Dam, is intended to provide sturgeon cues to migrate further upstream from their staging areas and spawn towards the end of the second peak and/or on its descending limb. Overall, the goal is to provide conditions that will enable sturgeon to migrate to, and spawn over, rocky substrates that exist upstream of Bonners Ferry.

Table 1. Kootenai Sturgeon Habitat Attributes from 2008 Libby Dam BO RPA Clarification.

<b>Attribute</b>	<b>Measure</b>	<b>Objective</b>
Area: RM 141.4 to RM 159.7		
Timing of Augmentation Flows	May into July (triggered by sturgeon spawning condition), in all years except for Tier 1.	Provide conditions for normal migration and spawning behavior.
Duration of Peak	Maximize peak	Through in-season

Augmentation Flows for Adult Migration and Spawning	augmentation flows with available water for as many days as possible, up to 14 days during the peak of the spawning period with pulses <sup>1</sup> , in all years except for Tier 1.	management, provide peak augmentation flows that lead to a biological benefit for sturgeon to maximize migration and spawning behavior via a normalized hydrograph.
Duration of Post-Peak Augmentation Flows for Incubation and Rearing	Maximize post-peak augmentation flows with available water for as many days as possible, up to 21 days, in all years except for Tier 1.	Through in-season management, provide post-peak augmentation flows that lead to a biological benefit for sturgeon to maximize embryo/free-embryo incubation and rearing via descending limb of a normalized hydrograph.
Minimum Flow Velocity <sup>2</sup>	3.3 ft/s and greater in approximately 60% of the area of rocky substrate in the area of RM 152 to RM 157 during post-peak augmentation flows.	Provide conditions for spawning and embryo/free-embryo incubation and rearing.
Temperature Fluctuation	Optimize temperature releases at Libby Dam to maintain 50° F with no more than a 3.6° F drop.	Provide conditions for normal migration and spawning behavior via a normalized thermograph.
Depth at Spawning Sites	Intermittent depths of 16.5 to 23 ft or greater in 60% of the area of rocky substrate from RM 152 to RM 157 during peak augmentation flows.	Provide conditions for normal migration and spawning behavior.
Substrate Extent/Spawning Structures	Approximately 5 miles of continuous rocky substrate; create conditions/features that improve the likelihood of recruitment success.	Provide habitat for embryo/free-embryo incubation and rearing.
Minimum Frequency of Occurrence	To facilitate meeting the attributes via: <u>powerhouse plus up to 10,000 cfs flow</u>	

<sup>1</sup> Kootenai sturgeon spawn on the descending limb of the hydrograph. “Pulses” refer to slight reductions in flow during this two-week period to initiate spawning.

<sup>2</sup> In order to develop an agreed-upon estimate and measurement of the areal extent of the velocity and depth attributes, the Action Agencies shall, together with the Service and in collaboration with other involved parties as needed, develop appropriate assessment tools (e.g., hydrologic models) of the braided reach.

	<p>test: a flow test will occur 2010 through 2012 (or until the Kootenai River Restoration Project is implemented) if the Service determines in 2008 and 2009 that the success criteria described in Action 1.3(b) have not been met.</p> <p><u>Habitat improvement projects and other options:</u> through adaptive management, as noted in RPA Components 2 and 5, implement the Kootenai River Restoration Project by the aspirational date of 2012-2016.</p>	
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The operating parameters outlined in this SOR are intended to provide some guidance on how to achieve the attributes listed in Table 1 of the 2006 USFWS BO, given the current water supply forecast. Previous years operations have shown that conditions at Libby Dam and in the Kootenai River basin can change rapidly. Recognizing this, the start date and exact shape of the operation will need to be developed and modified in-season as more is known. The in-season coordination will occur in the sturgeon technical team and with a final recommendation coordinated through the action agencies and the Technical Management Team.

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger / Erick Van Dyke  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT CONFERENCE CALL

May 8, 2013 9:00am - 12:00pm

### CONFERENCE CALL INFORMATION

Phone Number (877) 336-1274

Access Code 3871669

Security Code 6392

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**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnnv.net](mailto:rgumpert@cnnv.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

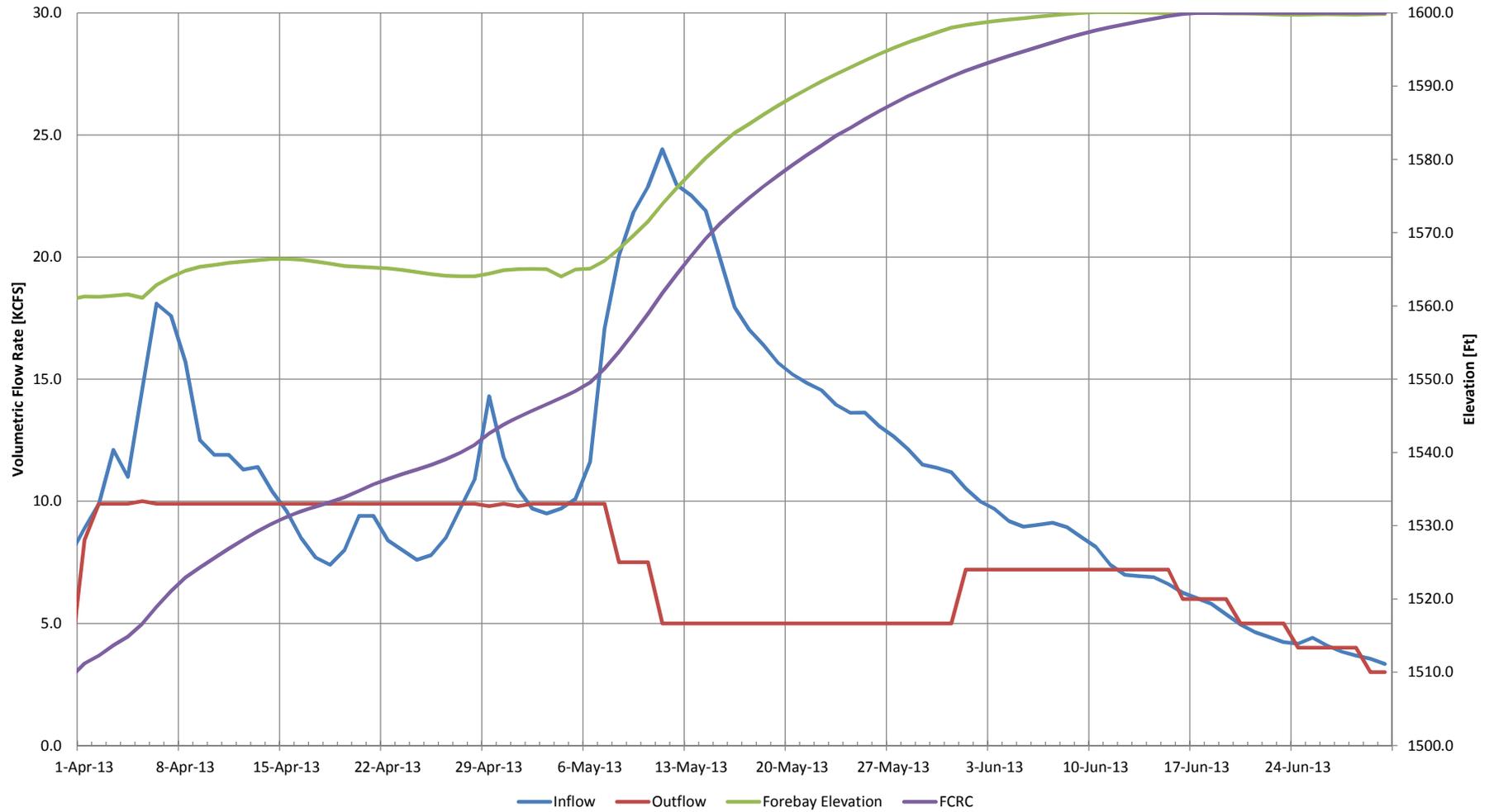
## AGENDA

1. Welcome and Introductions
2. Dworshak Operations - Karl Kanbergs, COE-NWD, and; Steve Hall, COE-NWW
  - a. [DWR Operations](#)
3. Libby Dam Releases for Sturgeon and Bull Trout Augmentation - Jason Flory, USFWS, and; Adam Price, COE-NWS
  - a. [SOR FWS#1](#)
  - b. [Libby Operations](#)
4. Other
  - a. Set agenda and date for next meeting - **May 15, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:*

*[Doug Baus](#) at (503) 808-3995*

### DWR Regulation to fill by 1 July 2013 using STP Inflows



# Libby Dam Refill Operations for 2013

**Adam Price**

Hydraulic Engineer

Seattle District

8 May 2013



US Army Corps of Engineers  
**BUILDING STRONG**®

# Forecast

- Current Apr-Aug inflow for Libby Dam
  - ▶ 6,535 KAF (111% of 1981-2010 average)
  - ▶ Surgeon Volume = 1.14 MAF

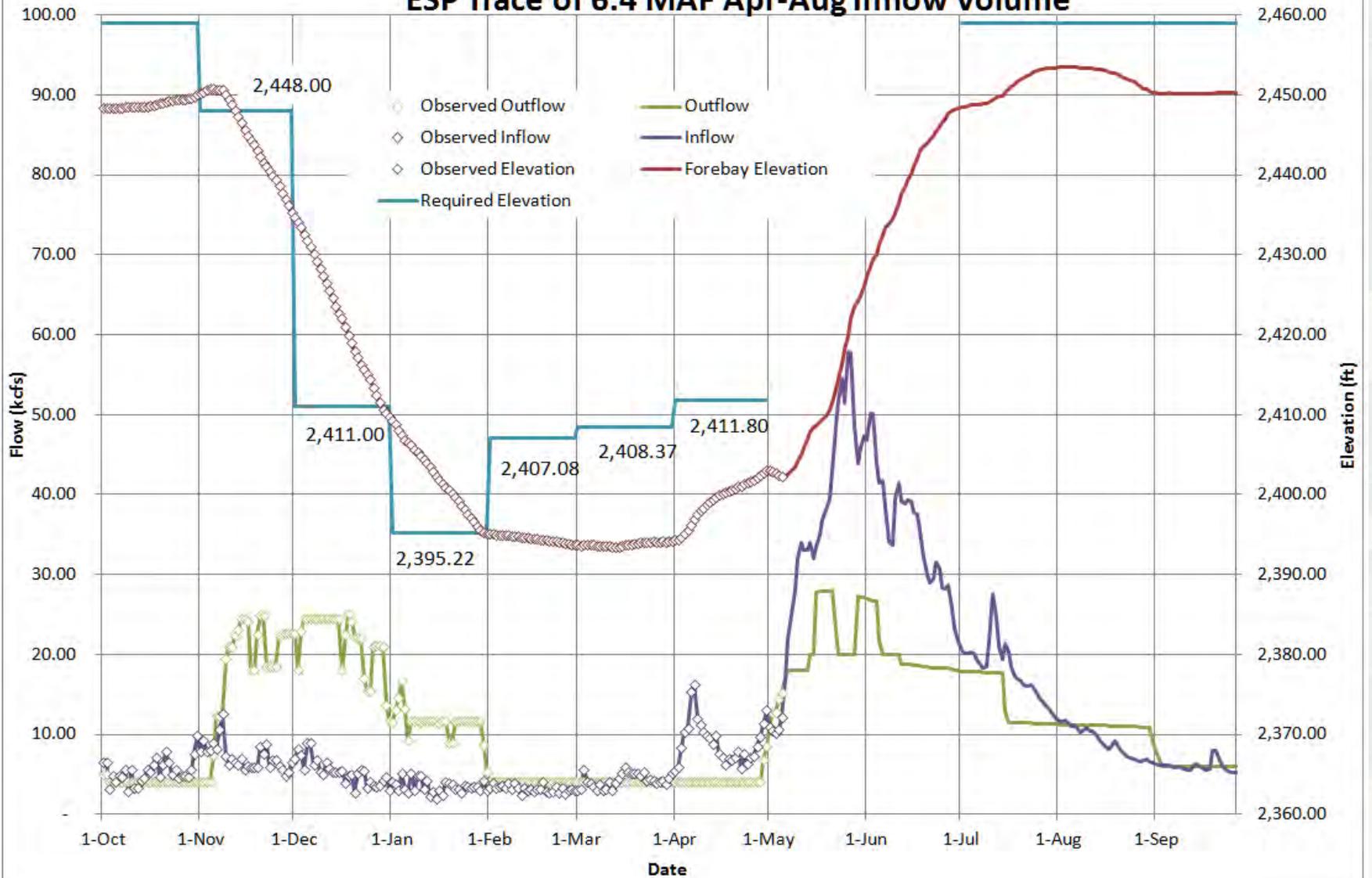


# Operations

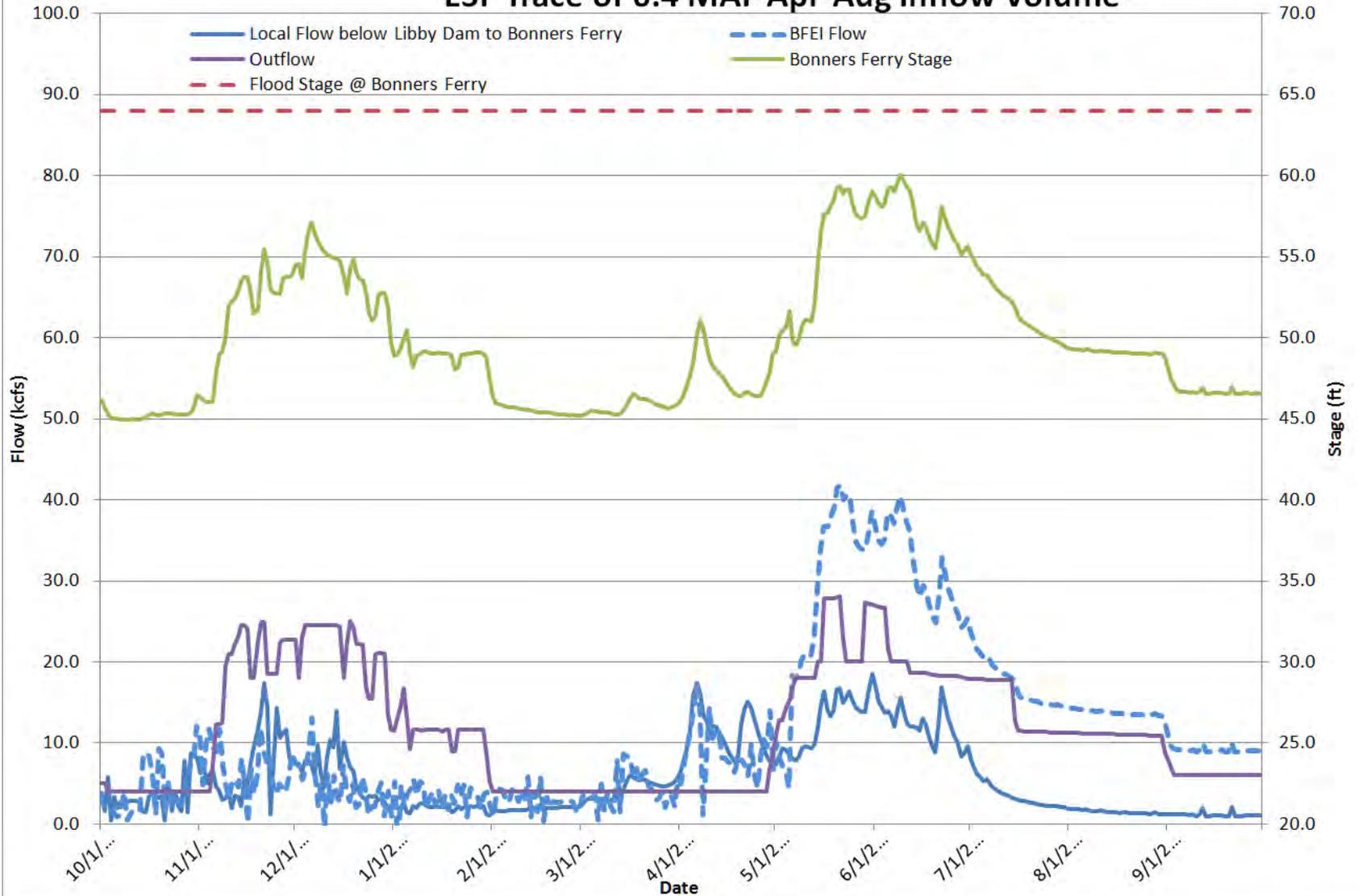
- Current Elevation is 2402 ft  
(2.3 MAF of 5.0 MAF available for Flood Control)
- Currently operating to VarQ flow, releasing 18 kcfs
- Coming Operations
  - ▶ Sturgeon Pulse
    - No spill
    - May come as early as mid May
    - Requires peak releases for 14 non-consecutive days
  - ▶ Summer Operations
    - Target elevations to support Kootenai Tribe Habitat Work



## Lake Kocanusa Operations from May 5th ESP Trace of 6.4 MAF Apr-Aug Inflow Volume

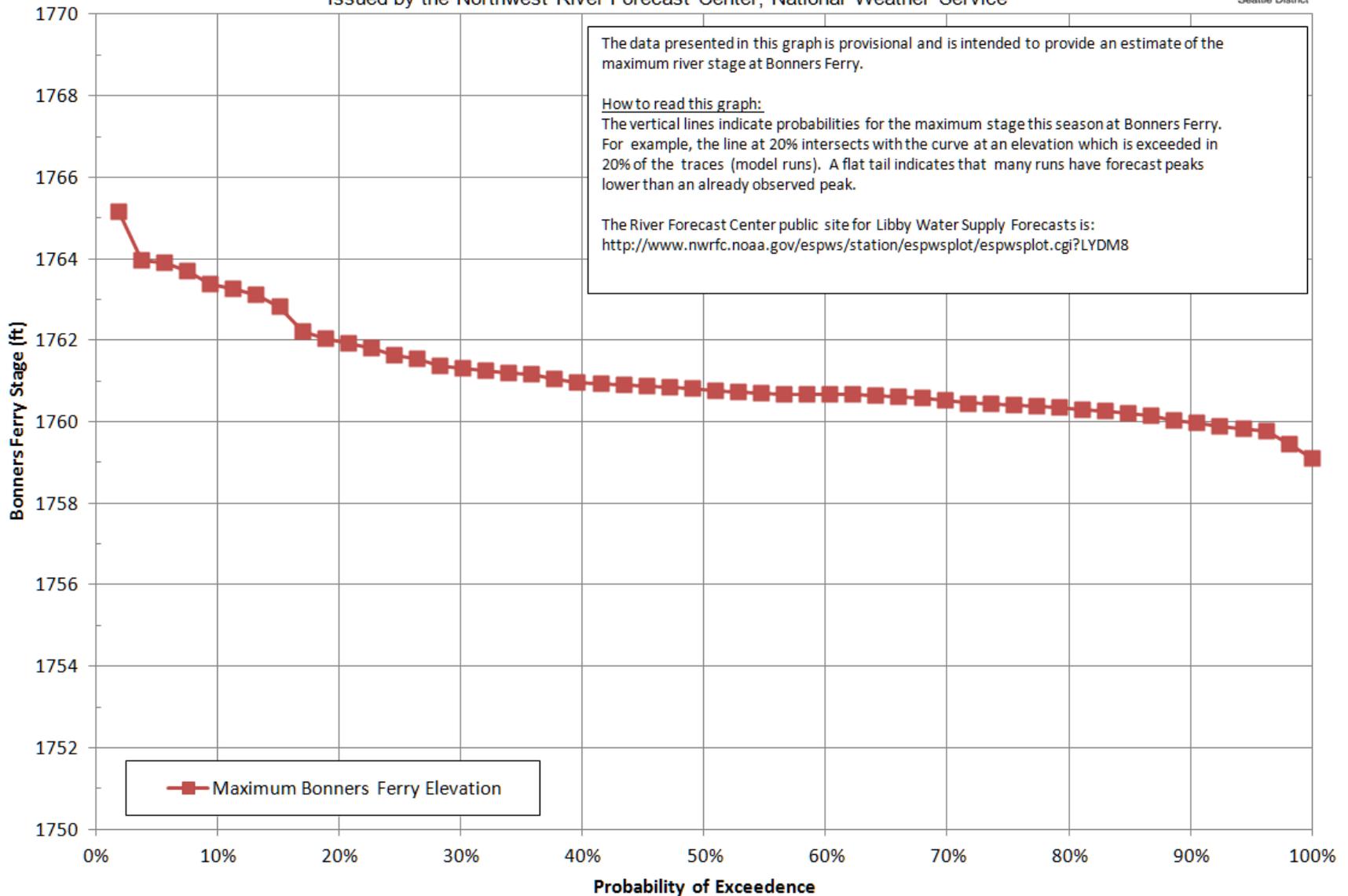


# Libby Dam Operations from May 5th ESP Trace of 6.4 MAF Apr-Aug Inflow Volume



# Maximum April-August Bonners Ferry Stage - Probability Chart

Corps of Engineers Projections Based on the 53 Ensemble Streamflow Prediction Traces  
Issued by the Northwest River Forecast Center, National Weather Service



# Summary of 2013

- Flood Risk moderate – based off current snowpack and predictions
- No Spill for the Sturgeon Pulse but expect operation to start earlier than the last few years (May 15<sup>th</sup> to May 31<sup>st</sup>)
- Peak elevation projected in Mid-August
- Maintain previous S.O.R.:
  - ▶ Target 2451.6 ft to 2449 ft end of August
  - ▶ Release 8 kcfs in September until the reservoir elevation reaches 2449 ft, then ramp down to 6 kcfs



# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 8, 2013

## DRAFT Facilitator's Summary

Facilitator: Donna Silverberg

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Dworshak Operations**

Steve Hall, Walla Walla Corps, presented a graph of a modeled operation scenario based on the latest STP and what he heard the salmon managers request for an operation over the next week. It showed Dworshak outflows dropping to 7.5 kcfs today and reducing to 5 kcfs Friday evening. He reminded TMT that a snow flight is planned for this month to affirm/add to current knowledge about conditions and expected runoff volumes.

Paul Wagner, NOAA, asked about the 'likely' response to the runoff over the next week, that flows will increase or decrease from predicted? Steve Hall said it could go either way; the prediction had been 27 kcfs inflows but with the latest weather forecast showing cooler temperatures, this inflow may not materialize. However the Corps thinks the inflows will peak in the next few days with warming conditions and the snow melt and is comfortable with the above proposed plan for operations over the next week. The salmon managers concurred.

**Planned Operation:** Given today's discussion, the Corps will continue 7.5 kcfs outflows through 5/10, then drop flows that evening to 5 kcfs using required ramp rates. TMT will revisit this issue at their next, 5/15 TMT meeting.

### **Libby SOR**

Jason Flory, USFWS, presented the SOR which was coordinated through the Kootenai Recovery Team and would provide operations during two periods of peak flows during the spring migration, one coinciding with low elevation runoff. The operation will be coordinated with the Corps and others along the way. Telemetry data for spawning Kootenai sturgeon females from 2010-2012 indicate that the spill tests did not facilitate a change in Kootenai sturgeon spawning and migration behaviors. Given the results from 2008-2012 sturgeon operations at Libby Dam, the team felt a different approach to managing the sturgeon volume is warranted. Real time coordination of the operation will happen between USFWS and Seattle District Corps along with other managers. TMT will also stay updated on a regular basis as the operation is implemented.

TMT members were polled on their level of support for the operation (Idaho was not present):

- Oregon – ok
- Montana – ok
- Washington – ok
- Nez Perce – ok
- Colville – ok
- CRITFC/Umatilla – ok
- NOAA – ok
- USFWS – ok
- Reclamation – ok
- BPA – ok
- Corps – ok

**Action:** The Corps will implement the SOR as described and provide regular updates to TMT.

#### **Little Goose Weir**

There will be an update for FPOM on this topic; TMT members were asked to look at Walla Walla's coordination information about the weir and needed feedback re: 'high to low' by 3:00 pm today.

#### **Next Meeting, May 15 face to face**

Agenda items include:

- Dworshak Operations
- Action Agency Response to SOR for McNary Summer Transportation
- Spring Creek Hatchery Release Summary
- Reclamation Upper Snake Flow Augmentation Status Update
- Vernita Bar Update
- Operations Review, including Libby update
- Other?

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

May 8, 2013

Notes: Pat Vivian

#### **1. Introduction**

Today's TMT conference call was chaired by Doug Baus, COE, and facilitated by Donna Silverberg, DS Consulting. Representatives of the COE, BPA, NOAA, Oregon, Washington, USFWS, Montana, BOR, CRITFC/Umatilla, Colville, Nez Perce tribes and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### **2. Dworshak Operations Update**

Steve Hall, COE Walla Walla, showed TMT a graph projecting Dworshak operations based on STP inflows. Yesterday Paul Wagner, NOAA, told the COE that FPOM reached agreement on the requested operation to hold 7.5 kcfs discharges through May 10. This morning at 0200 hours, the COE dropped Dworshak from full powerhouse to 7.5 kcfs to begin refill.

The graph then shows outflows dropping to 5 kcfs from the evening of May 10 to the end of May, at which point outflows would be about 7.2 kcfs through June until the reservoir is topped off. Hall emphasized the refill operation must meet multiple criteria, including snow covered area criteria. Currently about 50% of the basin is covered in snow, which means there's currently 300 KAF of space more than the required flood control space in the reservoir. As conditions this time of year change quickly the COE is planning to verify the amount of snowpack prior to the end of May. In refilling Dworshak reservoir, the COE must also strike a balance between refill and flood control criteria.

Wagner asked whether the coming heat wave would be likely to result in an increase or decrease in discharges from Dworshak; Hall said that could go either way. This scenario looks good as a tentative plan, Wagner replied.

Dave Statler, Nez Perce, asked whether Dworshak inflows are likely to peak in the next few days and Hall said yes, it wouldn't surprise him if peak runoff over the next few days turns out to be the peak for the season.

There were no objections today to the operation depicted in Attachment 2a. TMT will revisit Dworshak operations in its meeting next week.

### **3. Libby Dam Releases for Sturgeon Pulse (SOR FWS #1) and Bull Trout Augmentation**

Jason Flory, USFWS, described this year's plans for flows under the sturgeon BiOp. The current forecast is 6.5 MAF, which makes this a 1.14 MAF year for sturgeon volume.

Because the spill test of the past 3 years apparently had little effect on Kootenai River sturgeon spawning, this year's operation will be different. The gist of SOR FWS-1 is to provide two periods of peak flows of about 5 to 7 days each instead of a single peak as in the past. The first peak will be timed to coincide with low elevation runoff in the tributaries below Libby Dam. The idea is to provide colder water as a cue for migrating spawners to begin the staging process. As low elevation runoff subsides, Libby flows would taper off, maintaining 18 kcfs at Bonners Ferry for a period of time.

Hopefully the second peak will result in sturgeon spawning further upstream of Bonners Ferry. Because this operation is not confined by the settlement agreement that called for 3 years of spill testing, the sturgeon operation this year will be more flexible, more responsive to local conditions and runoff. USFWS and the COE will coordinate daily to implement the SOR and hold weekly conference calls with stakeholders in the area to keep them informed.

Jim Litchfield, Montana, requested that TMT be kept informed as decisions are made to shape the two peaks at Libby. Adam Price COE Seattle, said that wouldn't be a problem.

Dave Statler, Nez Perce Tribe, asked how temperatures will be managed. The strategy is to reduce volume, which tends to skim warmer water from the surface of the forebay, in an attempt to get sturgeon to spawn toward the end of the second peak, Flory replied. Warmer water induces spawning.

The current reservoir elevation is 2402 feet, refilling, with about 2.3 MAF still available for flood control. Releases are 18 kcfs and inflows around 19 kcfs. The sturgeon pulse could begin in mid May, as early as this weekend. The COE will implement the Libby habitat SOR as well, which targets a reservoir elevation of 2451.6-2449 feet at the end of August and then releasing 8 kcfs in September until the reservoir elevation reaches 2449 feet and then ramping down to 6 kcfs for tribal habitat restoration work. Flood risk at Bonners Ferry is expected to be low this year, which means Libby will have greater ability to operate at full powerhouse for sturgeon flows. Peak reservoir elevation is expected to occur in the first to the third week of August.

TMT members were polled on SOR-FWS#1. **NOAA, Oregon, Montana, Washington**, the **Colville Tribe, BOR, BPA** and the **COE** all supported the SOR; the **Nez Perce** and **CRITFC/Umatilla** tribes had no objection. **Idaho** was not represented on today's call. TMT will coordinate implementation of the sturgeon pulse SOR in upcoming TMT meetings.

#### **4. Little Goose Spillway Weir**

Baus alerted TMT members that participate in FPOM to an email from the COE Walla Walla office requesting feedback by 3 pm today on a proposal to change the Little Goose spillway weir from the high crest to the low crest position.

#### **5. Next TMT Meeting**

TMT will meet next in person on May 15. The agenda will include Dworshak operations, a Spring Creek Hatchery update, Upper Snake flow augmentation, the COE's response to the McNary transport SOR, a Libby update and the usual operations review.

<b>Name</b>	<b>Affiliation</b>
Doug Baus	COE
Tony Norris	BPA
Karl Kanbergs	COE
Dan Feil	COE
Scott Bettin	BPA
Agnes Lut	BPA
Paul Wagner	NOAA
Rick Kruger	Oregon
Eric Van Dyke	Oregon
Charles Morrill	Washington
David Wills	USFWS
Jim Litchfield	Montana
Tom Lorz	CRITFC/Umatilla
Sheri Sears	Colville
Dave Statler	Nez Perce
John Roache	BOR
Steve Hall	COE
Heather Dohan	Puget
Margaret Filardo	FPC
Jason Flory	USFWS
Adam Price	COE Seattle
Greg Hoffman	COE Libby Dam
Greg Lawson	Thompson Reutters
Richelle Beck	Grant PUD
Don Tinker	SCL
Barry Espenson	CBB
Ruth Burris	PGE
Bruce McKay	hydro consultant

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Dominique  
**OR:** Rick Kruger / Erick Van Dyke  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

Wednesday May 15, 2013 9:00am - 12:00pm

1125 N.W. Couch Street, Suite 500, Columbia Room  
Portland, Oregon 97209-4142  
Map Quest [\[Directions\]](#)

### TMT MEETING

Phone Number (877) 336-1274

Access Code 3871669

Security Code 2765

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnmw.net](mailto:rgumpert@cnmw.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

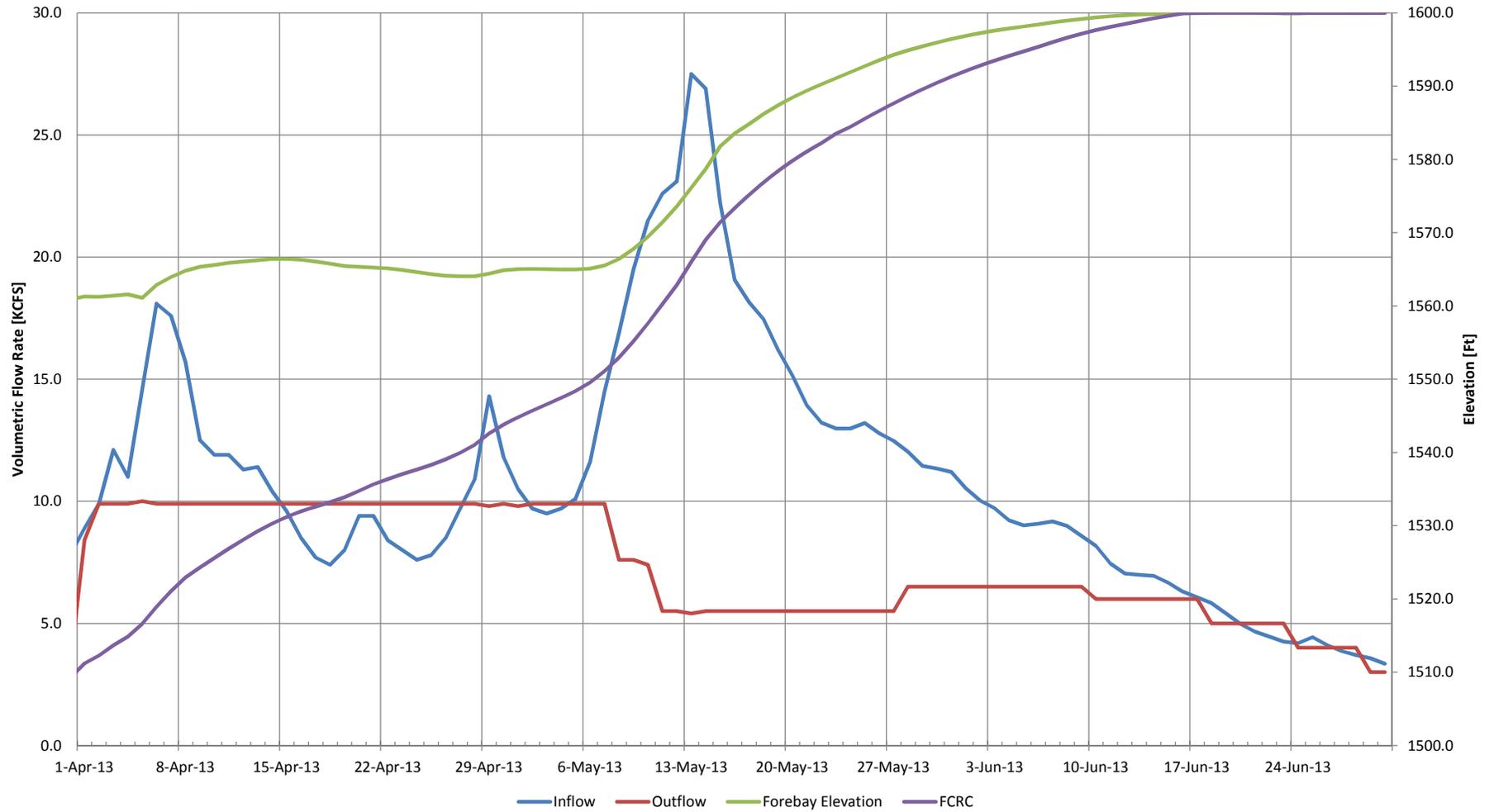
## AGENDA

1. Welcome and Introductions
2. Review April 24, May 1 and 8 Meeting Minutes
3. Dworshak Operations - Karl Kanbergs, COE-NWD; Steve Hall, COE-NWW
  - a. [Dworshak Operations, May 15](#)
4. Spring Creek Hatchery Release Update - David Wills, USFWS
5. Upper Snake River Flow Augmentation - John Roache, BOR
6. Response to McNary SOR - Doug Baus, COE-NWD
  - a. [2013-1](#)

7. Lower Monumental Dam - *Paul Wagner, NOAA Fisheries; Doug Baus, COE-NWD*
  - a. [FOP Criteria](#)
  - b. [Spill Priority List - Proposed, May 15](#)
  - c. [Spill Priority List - Coordinated Final, May 15](#)
  - d. [Spill Priority List - Revised May 17](#)
8. Vernita Bar Update - *Russell Langshaw, Grant County PUD*
  - a. [2012-2013 Hanford Reach Fall Chinook Protection Program](#)
9. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
10. Other
  - a. Set agenda and date for next meeting - **May 22, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Doug Baus](#) at (503) 808-3995*

### DWR Regulation to fill by 1 July 2013 using STP Inflows



important for both adult fish passage and juvenile fish egress. If low flow conditions occur in the spring, the full  $\pm 1\%$  of best efficiency range will be restored to minimize impacts on spill levels.

### **Lower Monumental**

**Spring Spill Operations April 3 through approximately June 20:** Spill to the 115/120% TDG gas cap 24 hours per day using the bulk spill pattern (see Operational Considerations).

**Summer Spill Operations Approximately June 21 through August 31:** 17 kcfs 24 hours per day.

#### **Changes in Operations for Research Purposes:**

- Research operations: Performance standard testing at 17 kcfs (summer) spill is planned to occur in 2013 at Lower Monumental Dam. Testing will begin in June and continue through mid-July. The dates of testing will be dependent on subyearling Chinook run timing and the size and availability of fish for tagging. Final dates for testing will be coordinated through the SRWG.
- Objectives of the biological test: The objectives of the test are to assess passage distribution and efficiency metrics, forebay retention and tailrace egress times, and dam survival for subyearling Chinook to determine if juvenile dam survival at 17 kcfs (summer) spill under the current project configuration meets or exceeds the juvenile dam survival performance standard for summer (93%) migrants specified in the 2010 Supplemental BiOp.

#### **Operational Considerations:**

- Consistent with adjustments made in 2012 spring operations through regional coordination, when total river flow is likely to exceed turbine capacity and spill over the 120% TDG gas cap (occurs at a total river flow of  $\sim 140$  kcfs) for three or more days, the project will use the uniform spill pattern. This may also occur if spill over the 120% TDG gas cap is required due to “lack of demand” spill at any river flow level.
- Daily average flows of  $\leq 32$  kcfs can result in incompatible operations with Little Goose Dam and may cause spill quantity fluctuations.
- Transit of the juvenile fish barge across the Lower Monumental tailrace, then docking at and departing from the fish collection facility, may require spill level to be reduced due to safety concerns. The towboat captain may request that spill level be reduced or eliminated during transit. During juvenile fish loading operations, spill is typically reduced to 15 kcfs, but can be reduced further if necessary for safety reasons. Barge loading duration can be up to 3.5 hours. Because of the time needed to complete loading at Lower Monumental, the Little Goose Project personnel will notify the Lower Monumental personnel when the fish barge departs from Little Goose. This ensures that BPA scheduling is provided advance notice for spill control at Lower

Monumental Dam. Reducing spill may cause the Lower Monumental pool to briefly operate outside of MOP elevations.

- Operating units within the 1% of best efficiency range translates to as much as 19 kcfs discharge for each of the 6 turbine units, for a maximum hydraulic capacity of approximately 114 kcfs. The expected spill cap is roughly 27 kcfs (but varies depending on total river flow). Therefore, if total river flow is greater than 141 kcfs the gas cap will be exceeded. Either lack of power load or unit outages can also cause forced spill above spill cap limits at higher total river flow.
- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Maintenance dates are subject to change.

### **Ice Harbor**

**Spring Spill Operations April 3 through June 20:** Spill will begin at 45 kcfs day/spill cap night on April 3 and continue until April 28. On April 28, spill will alternate between 45 kcfs day/spill cap night and 30% /30% with the SW operating and continue through the spring season. Nighttime spill hours are 1800–0500.

**Summer Spill Operations June 21 through August 31:** Spill operations will continue from spring at 30% 24 hours per day vs. 45 kcfs day/Gas Cap night until July 13 at 0500 hours, then 45 kcfs day/Gas Cap night through August 31.

### **Changes in Operations for Research Purposes:**

- Research operations: There are no special spill operations for research planned in 2013. Spill patterns as described in FPP Section 6 will be used.

### **Operational Considerations:**

- Spill operation treatments may be rearranged within a week throughout the season. If rearrangement of treatments occurs, the total number of each spill level treatment for the spring season will not change. The flexibility to rearrange treatments during periods of higher power demand may alleviate the need to declare a power emergency.
- Powerhouse capacity at Ice Harbor is approximately 94 kcfs with all 6 units operating within the 1% of best efficiency range, while spill cap rates are about 100 kcfs. If total river flow exceeds about 194 kcfs, TDG levels may exceed the water quality standards set by the States of Oregon and Washington.
- Unit outages may occur for required or emergency unscheduled maintenance activities described in FPP Appendix A. Dates are subject to change.
- Submersible Traveling Screens (STs) will be installed by April 1. The normal juvenile bypass operation will be to route fish through the full flow bypass pipe, which has interrogation capability to monitor for PIT tags. From April 1 through July 31, juvenile fish will be sampled every 3 to 5 days to monitor fish condition and then bypassed to the river. Sampling activity may be terminated early should juvenile bypass fish numbers drop to the point where valid sampling is no longer feasible (100

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 15, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Notes Review**

TMT reviewed the 4/24, 5/1 and 5/8 Official Meeting Minutes and Facilitator's Summary. John Roache, Reclamation, offered some corrections to the 4/24 Facilitator's Summary, and Doug said he would make the changes and re-post the corrected version. With those changes, the three sets of notes were considered final.

### **Dworshak Operations**

Steve Hall, Walla Walla Corps, presented a graph of a modeled operation scenario based on the latest STP and a continuation of the current, 5.5 kcfs outflows through the end of May. According to the graph with the latest STP, Steve said refill would occur around June 13 using this operating scenario.

Dave Statler, Nez Perce, asked about the flood control operations this year, to which Steve said the project was managed to system flood control. Also, Steve said a snow flight was scheduled for 5/28 and at this time, it was estimated that 38% snow pack remained.

**Planned Operation:** Given concurrence at TMT, the Corps will continue operating Dworshak at 5.5 kcfs outflows for another week. TMT will revisit this operation during a conference call on 5/22.

### **Spring Creek Hatchery Release**

Dave Wills, USFWS, reported that the second release, of 4.8 million fish, occurred on 5/2. Operations went very smoothly, with mortalities ranging 0-2% as measured at the sample facility at Bonneville. Dave thanked the Corps and BPA for their coordination and providing a good operation.

### **Upper Snake Flow Augmentation**

John Roache, Reclamation, reported on the latest Upper Snake flow augmentation estimates for releasing a total 427 kaf. While these are estimates and will be updated, John said they probably won't change much:

- 154.7 kaf from the Upper Snake (which began on 5/1)
- 77.7 kaf natural flows

- 19 kaf Boise
- 175.6 kaf out of the Payette (June-August)

### **Response to McNary Transportation SOR**

Doug Baus, Corps, shared the Action Agencies' response to an SOR submitted on 4/23 and discussed at the 4/24 TMT meeting re: summer transportation operations at McNary. The Corps will implement the request for 2013.

### **Lower Monumental Dam/ Spill Priority List**

Paul Wagner, NOAA, presented on behalf of the salmon managers a request to rearrange the spill priority list by placing Lower Monumental at the top of the list for all Levels, and for the action agencies to consider switching Lower Monumental from a bulk to uniform pattern as a Level 1 step before making any changes at the other projects. The rationale was that this would be a good tool to provide adequate spill at Lower Monumental for passing in river fish, rather than at Lower Granite where transportation operations were the most beneficial; AND to help prevent TDG levels from exceeding 120%.

Doug Baus, Corps, referred to a link to the agenda with the FOP language describing criteria for switching Lower Monumental to uniform spill: when the project has exceeded turbine capacity (approximately 140 kcfs) and spill over the 120% TDG gas cap for three or more days; or due to lack of load/power demand. He said that current LMN inflows nor the current NWRFC showed LMN would achieving these criteria the Corps did not plan on switching to the uniform pattern. They and the other action agencies agreed with the recommendation for moving Lower Monumental up the spill priority list but were not yet seeing a rationale to switch to a uniform pattern given the criteria were not being met to do so. They did however put into the spill priority list that Lower Monumental would switch to a uniform pattern when conditions required them to operate to Level 2 on the list –Lower Monumental uniform spill was the first priority on the Level 2 list.

Other comments were considered:

- Move the three Mainstem projects up above Lower Granite and Little Goose to support the transportation interest.
- Consider Pacific lamprey as an important species whose passage at Lower Granite is important.
- Move The Dalles down the list because it has a large spill wall and there are erosion concerns.

After further TMT discussion and consideration by the action agencies, the following spill priority list was approved today (\*Note: the concern voiced by Nez Perce about the impacts on migrating juvenile Pacific lamprey from reducing spill at Lower Granite were echoed by other TMT members. That said, no objections were raised to the following list.):

#### Level 1

- Lower Monumental bulk
- Lower Monumental uniform
- Ice Harbor
- McNary
- John Day
- Little Goose
- Lower Granite
- Bonneville
- The Dalles
- Chief Joseph
- Grand Coulee
- Dworshak

#### Level 2

- Lower Monumental uniform
- Ice Harbor
- McNary
- John Day
- Little Goose
- Lower Granite
- Bonneville
- The Dalles
- Chief Joseph

#### **Vernita Bar Update**

Russell Langshaw, Grant County PUD, updated TMT that protection flows are set to end on June 1, which was early due to the higher temperatures this year. He shared an operations slide showing daily delta constraints, actual operations, and 1 exceedance during the period 4/21-22 which was intentional

given a transition to a lower discharge week. The past week of operations ran 150 kcfs minimums. The sampling program will continue a little beyond the end of protections since the operation is ending so early; Russell said the operation has gone well. He will update TMT again in mid-June.

### **Bonneville PH 2/ Sockeye Descaling**

Tom Lorz, CRITFC/Umatilla, reported that the presence of debris and operations of Bonn Powerhouse II at the upper level of 1% have led to increased descaling and mortalities in many of the species, most notably sockeye, and has risen to a level where there is a concern warranting a proposed change in operations. While an FPOM task team has been working on a change form request for a long term solution to this issue, the decision on that was still pending and would not be made in time to address the acute issue occurring at the project right now. While an FPOM task team has been working on a change form request for a long term solution to this issue, the decision on that was still pending and would not be made in time to address the acute issue occurring at the project right now. The Fish Passage Center data showing the descaling and mortality rates was reviewed and Salmon Managers agreed there was a problem. Tom shared the proposed operation as written in the change form, which takes a step wise approach to operating Bonneville during lower flow conditions that is slightly different than what was proposed and implemented via an SOR process last year. Questions about impacts to adult fallback were addressed; Tom also referred TMT members if interested to look at the supporting documentation from the FPOM Task Team that looks at a range of issues including adult fallback. Task Team members included representatives from the Corps, CRITFC/Umatilla, USFWS, Idaho, Oregon, and FPC; and experts in fish biology as well as turbine engineering. Tom's request was to implement an operation as soon as possible for the next two weeks.

Planned Operation: After discussion with the project about options for implementing, the Corps responded that they would be able to provide the following short term, flow neutral operation given the limitations in unit availability at Powerhouse 1: Decrease flows by 9 kcfs at PH 2, and add 9 kcfs to PH 1.

Salmon Managers members accepted this planned operation as a step in the right direction, but did express concern that this was not going far enough and should not be considered a viable long term solution. Dave Statler, Nez Perce, also asked that the group consider how a requirement for a 'flow neutral' operation would impact long term decisions. Tom Lorz, CRITFC/Umatilla, also offered a preference to prioritize decreasing flow from approximately 18kcfs to 15kcfs through PH2 units 18, 13, 14 and/or 17 while allowing units 15, 16 (out of service), and 12 to continue operating within 1 percent .

Everyone will monitor the situation closely and, unless the need arises to convene sooner, the team will revisit this issue at their 5/22 conference call.

### **Operations Update**

Reservoirs – Hungry Horse was at elevation 3537.9 feet and filling. With 35 kcfs inflows, local flood control needs required the project to reduce to minimum outflows temporarily; flows will be increased as soon as possible. Grand Coulee was at elevation 1260.95 feet; with inflows at 215 kcfs and increasing,

leading to rapid refill of the project. Lisa Wright, Corps, reported that Libby was at elevation 2412.9 feet with 65.6 kcfs inflows and 22 kcfs outflows. Joel Fenolio, Seattle District Corps, updated on the Libby operation for sturgeon. He said local flood control concerns at Bonners Ferry required the project to pull back on flows a bit. Albeni Falls was at elevation 2057.9 feet with 84 kcfs inflows and 68.9 kcfs outflows. Dworshak elevation was 1578.7 feet, with 26.9 kcfs inflows and 5.5 kcfs outflows. Lower Granite average inflows were 136.2 kcfs; McNary inflows were 333.9 kcfs; and Bonneville inflows were 341.7 kcfs. Lisa reported on a survey to collect velocity data that would be occurring at Lower Granite requiring holding flows steady during the duration of data collection. Doug Baus, Corps, also reported on a few minor departures from normal operations in the Lower Snake; one on 4/16 when Lower Monumental dropped slightly below MOP due to a decrease in Little Goose discharges; that same day operating below the gas cap spill level by 1.3 kcfs; and at Ice Harbor during a 9 hour period between 4/7 and 4/8 the average spill was 200 cfs below the gas cap spill level (spilled 62.9 rather than 63.1 kcfs) o due to human error.

Fish – Paul Wagner, NOAA, reported on adult passage – spring Chinook were passing Bonneville at 1,000-1,500/day, well below the forecast. Jacks on the other hand were well above the average by about 400%. The TMT looked at NOAA's ocean conditions predictions tool to see if there were obvious links to the passage numbers. For juveniles, subyearling Chinook were passing Lower Granite at about 2,000-6,000/day; yearling Chinook appear to have peaked at 200,000 at Lower Granite; steelhead are on the rise with the latest count of 123,000 at Lower Granite; and sockeye counts were about 5,000/day at Lower Granite. Lamprey were passing too, with index counts of 1,200 at Lower Granite, 6,400 at Little Goose and 571 at John Day.

Water quality – Scott English, Corps, shared that involuntary spill was happening in the system resulting in some TDG exceedances.

Power system – Nothing to report.

### **Next Meeting, May 22 Conference Call**

Agenda items include:

- Dworshak Operations
- Bonneville PH operations/Descaling
  - Update on FPOM Change Form decision
- Spill Priority List (as needed)

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

**May 15, 2013**

Notes: Pat Vivian

#### ***1. Introduction***

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of the Nez Perce Tribe, COE, BOR, Montana, NOAA, Oregon, USFWS, BPA, Washington, CRITFC/Umatilla, Idaho and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

Discussion of Bonneville PH2 turbine operations to minimize descaling was added to today's agenda at the request of Tom Lorz, CRITFC/Umatilla.

#### ***2. Review of Meeting Minutes – April 24 and May 1 and 8, 2013***

John Roache, BOR, had comments on the April 24 facilitator's notes in the Operations Review section. At the bottom of page 5 under Reservoirs, the sentence should say, "Hungry Horse was releasing 10.6 kcfs and is forecasted to be below the end of month flood control elevation." The Grand Coulee section should say, "Coulee was targeted to be no higher than 1258.5 feet at the end of the month and will be at or below the 1258.5 foot flood control elevation at the start of refill."

With these changes, all of these meeting notes and minutes will be considered final unless future concerns are raised.

#### ***3. Dworshak Operations***

Steve Hall, COE Walla Walla, reported that Dworshak inflows have been 25 kcfs for the past few days, based on the latest STP run. The project is making 5.5 kcfs releases through the end of May and possibly until the project refills. There could be an increase to 6 kcfs releases for a few weeks at the beginning of June if hydrologic conditions allow. Current projections, shown in attachment 3a, indicate the project will fill around June 13.

The COE is planning a snow flight on either May 24 or 28 to verify the amount of snowpack left in the basin. Currently, the snow covered area at Dworshak is 38%. This year, the flood control operations at Dworshak have been primarily focused on system flood control.

Paul Wagner, NOAA, said the COE's plan for Dworshak looks fine. TMT will revisit Dworshak operations in its May 22 conference call.

#### **4. Spring Creek Hatchery Release**

The last release of 2013 occurred on May 2, when 4.8 million fish were released, for a total of 11.2 million smolts this year. David Wills, USFWS, reported that the operation went smoothly, with mortality rates of 0-2% averaging around 1% as measured at the Bonneville juvenile sampling facility.

#### **5. Upper Snake Flow Augmentation**

The BOR plans to provide the full 427 KAF of flow augmentation this year, John Roache reported. Most of that will be powerhead. Estimated contributions from various sources are:

- 154.7 KAF – Upper Snake basin above Milner
- 77.7 KAF – Natural flows
- 19 KAF – Boise basin, beginning today through end May
- 175.6 KAF – Payette basin, June through August

#### **6. Response to McNary SOR 2013-1**

The COE will implement this SOR as requested by TMT, Baus reported. This means there will be no transportation at McNary this year.

#### **7. Lower Monumental Dam Spill Pattern**

Spill at Lower Monumental Dam is currently limited to 24 kcfs by TDG levels in the downstream Ice Harbor forebay, Wagner said. This time of year, Lower Granite, Little Goose and Lower Monumental are preferred sites for transport in that order. The spill limitation at Lower Monumental means a higher percent of fish will be transported this year.

For this reason, the Salmon Managers recommended elevating Lower Monumental to the top of the Level 2 spill priority list from third place where it is now. In addition, the Salmon Managers recommended switching Lower Monumental from a flat to a uniform pattern as the second priority action on the Level 1 list because the uniform pattern produces less gas, allowing more spill.

Attachment 7a shows the FOP criteria that have served in the past to guide the shift from bulk to uniform spill at Lower Monumental, Baus said. Attachment 7b shows the spill priority list the Action Agencies propose would achieve the Salmon Managers goal. The Action Agencies would have no problem moving Lower Monumental to the top of the Level 2 spill priority list for now, Baus said, with the caveat that it will be moved to the bottom of the list when performance testing starts.

However, the Action Agencies would need to caucus before agreeing to include the uniform pattern as the second priority in Level 1 spill because this proposal doesn't

conform to criteria established in the FOP (when total river flow is likely to exceed turbine capacity and spill over the 120% TDG gas cap (occurs at a total river flow of approximately 140 kcfs) for three or more days).

The Salmon Managers commented. Instead of reducing spill to avoid exceeding water quality standards in the Lower Monumental tailwater or Ice Harbor forebay, the first tool should be switching to the uniform spill pattern to reduce gas, Russ Kiefer, **Idaho**, said. This approach is consistent with yesterday's FPAC discussion, **Oregon**, **Washington** and **USFWS** agreed. **NOAA** also supported this approach because transport benefits at Lower Granite are the most certain. An increase in spill to 40 kcfs at Lower Granite would mean putting more fish in the river, which doesn't make sense. Spill should be increased at Lower Monumental first because transport benefits there are less certain.

Baus explained that adding uniform spill to the list would mean shifting to the uniform pattern sooner than the Action Agencies expected, or when either the 115% or 120% TDG standard is approached (Level 1 spill), rather than when the 120% TDG gas cap is approached (Level 2 spill). Scott Bettin, BPA, suggested moving the three mainstream dams to the top of the list, maximizing transport at all three. **Washington**, **Idaho** and **NOAA** agreed with this proposal.

Kiefer suggested the following order for Level 1 spill: Lower Monumental bulk, Lower Monumental uniform, Ice Harbor, McNary, John Day, The Dalles, Bonneville, Little Goose, Lower Granite, Chief Joseph, Grand Coulee and Dworshak. Rick Kruger, **Oregon**, supported this list, but only if the uniform pattern at Lower Monumental is included. Dave Statler, **Nez Perce**, said downstream lamprey migration needs to be part of spill decisions. Charles Morrill, **Washington**, said TMT has an opportunity to use an adaptive management tool to benefit fish by moving them away from the Lower Monumental bypass system.

Tom Lorz, **CRITFC/Umatilla**, suggested moving The Dalles below Bonneville on the list due to erosion concerns in the vicinity of The Dalles spill wall. The order for Level 1 spill would then be: 1. Lower Monumental bulk, 2. Lower Monumental uniform, 3. Ice Harbor, 4. McNary, 5. John Day, 6. Little Goose, 7. Lower Granite, 8. Bonneville, 9. The Dalles, 10. Chief Joseph, 11. Grand Coulee, 12. Dworshak.

The Action Agencies agreed to adopt this proposed order with the exception of uniform spill (step 2) at least until they caucus. Comments on this response were as follows:

- **Idaho** – Supports this order of spill priorities.
- **Washington** – Will not object, but uncomfortable with reducing spill at Lower Granite.
- **NOAA** – Supports this order of spill priorities.
- **Oregon** – Will not object, but uncomfortable with reducing spill at Lower Granite.

- **Umatilla** – Supports this order of spill priorities, deferring to the Nez Perce re: lamprey passage concerns.
- **Nez Perce** – Favors implementation of more spill at Lower Granite.
- **USFWS** – Supports this order, but doesn't want spill to be reduced at Lower Granite because of problems in the Little Goose forebay.
- **BOR** – No objection to proposed list.
- **BPA** – No objection to proposed list.

The Action Agencies held a caucus and announced they will implement the request to put Lower Monumental uniform spill in position 2 on the Level 1 list proposed by Lorz. Therefore the following was the final Level 1 spill priority list coordinated during the meeting: 1) Lower Monumental Bulk, 2) Lower Monumental Uniform, 3) Ice Harbor, 4) McNary, 5) John Day, 6) Little Goose, 7) Lower Granite, 8) Bonneville, 9) The Dalles, 10) Chief Joseph, 11) Grand Coulee, and 12) Dworshak. Subsequent levels of the spill priority list will follow a similar order without bulk spill at Lower Monumental.

This was subsequently changed at the request of FPAC due to Snake River Hatchery releases on May 17 to the following: 1) LMN Bulk, 2) LMN Uniform, 3) LWG, 4) LGS, 5) IHR, 6) MCN, 7) JDA, 8) BON, 9) TDA, 10) CHJ, 11) GCL, and 12) DWR. If there are any problems with these spill priorities before next week's conference call, TMT will have an unscheduled call.

## ***8. Vernita Bar Update***

Russell Langshaw, Grant PUD, gave an update on the Hanford Reach fall chinook protection program, which is projected to end June 1 this year. That's about 2-3 weeks earlier than usual, and is largely the result of higher temperatures in the river than the mean historic average.

In April there was one intentional exceedance on April 20-21, caused by transitioning from a week of high flows of 195 kcfs to a weekend of minimum flow constraints. The decision to have an intentional exceedance rather than a sudden drop in flows appears to have resulted in a good operation. Within the past few weeks, flows have risen again, with 150 kcfs minimum constraints in place for the past week. The daily delta for the week is 70.4 kcfs and the mean discharge is 7.7 kcfs.

Wagner asked how long sampling will continue. Probably for a week or two after the protection program ends to confirm, given warmer water temperatures this year, that the program is on track, Langshaw said. He will give TMT a final report during the second week of June.

## ***9. Bonneville Powerhouse 2 Descaling Issue***

This issue was added to today's agenda at the request of Tom Lorz. In response to higher flows and increased descaling at the Bonneville powerhouse 2, FPOM has prepared a change form to the Fish Passage Plan requesting a tiered approach similar

to previous years' operations for powerhouses 1 and 2. This year they added an adult trigger: 3 consecutive days of lower adult counts than juvenile counts. **Washington** and **Idaho**, which were not represented at yesterday's FPOM meeting, expressed support for the proposal. The **Nez Perce Tribe** deferred to the task force recommendation. Lorz said the purpose of raising the issue at TMT is to adopt temporary measures quickly enough to respond to real-time conditions while a longer term solution is sought via a change to the FPP.

Scott Bettin, BPA, pointed out that this year's proposal for Bonneville operations differs from last year's operation in two ways, the addition of an adult trigger and the request to go to BOP (best operating point) at powerhouse 1 instead of open geometry. Furthermore, this year there are transmission limits on the Bonneville 115-kV line that were not in effect last year. Current TDG readings in the Bonneville tailrace are over 120%, another limiting factor.

Lorz explained that BOP was the recommendation of the turbine work group, which was not comfortable with open geometry as a safe operation for fish. Several Salmon Managers expressed the TMT is in a position to implement the needed changes more quickly than FPOM can via the FPP change form process.

After caucusing, the Action Agencies proposed a different operation – a flow-neutral operation under current hydraulic conditions and transmission limits. While powerhouse 1 could handle an approximate 30 kcfs increase outside of the 1 percent range (approximately 1-2 MW below the cavitation limit) last year, this year it can only handle 18 kcfs, and that's if all units were in service and operating at best geometry instead of BOP. Under current conditions, with a unit out of service and the 115 kv restriction all other available units operating at BOP, powerhouse 1 can handle and increase of approximately 9 kcfs. The Action Agencies therefore proposed to implement a modified version of the Salmon Managers' request by rerouting 9 kcfs from powerhouse 2 to powerhouse 1, thus keeping the operation flow-neutral.

Wagner asked why the operation needs to be flow-neutral. Bill Proctor, COE, replied that Bonneville tailrace gas levels are already in the 122-123% range at 145 kcfs of spill. If gas levels come down, spill could be increased at powerhouse 1 by adding a fourth unit.

The Salmon Managers gave their views of the Action Agency proposal:

- **CRITFC/Umatilla** – This proposal is an improvement, but not where we need to be. Won't object to it, however.
- **Oregon** – Agrees with Umatilla.
- **NOAA** – This is a small step in the right direction; we need to go farther in crafting a permanent solution.
- **Washington** – This proposal addresses the immediate situation, but a better remedy is needed.

- **Nez Perce** – Agrees the proposal is an improvement, but a better remedy is needed.
- **USFWS** – A better remedy is needed. Would not support removal of fish screens as a remedy, unless debris becomes an issue.

Lorz was asked which three of the powerhouse 2 units should have their loads cut by 3 kcfs apiece. He prioritized them as units 18, 13 and 14, then unit 17 if gas levels come down, followed by units 15, 16 and 12.

TMT will revisit the Bonneville operation in its May 22 conference call. If there are indications of problems in the meantime, TMT will hold an unscheduled conference call.

## **10. Operations Review**

**a. Reservoirs.** Hungry Horse is at elevation 3537.9 feet, with inflows of 34 kcfs on May 14 – even higher than the peak inflow in 2011. Releases were reduced to a minimum of 500 cfs for local flood control at Columbia Falls. This operation will continue until Columbia Falls drops below 13 feet elevation, the new flood stage established in response to recent flooding above Flathead Lake. Grand Coulee is at elevation 1260.95 feet, with inflows of 216 kcfs, a rate that is expected to continue over the next 10 days or so.

Libby is at elevation 2412.9 feet, with inflows of 65.6 kcfs and releases of 22 kcfs. Releases were increased to full powerhouse on May 11 to begin the sturgeon pulse, but had to be cut back on May 13-14 because Bonners Ferry stage peaked at 1763.1 feet, or within a foot of flood stage. Full powerhouse releases will continue until May 17, then the project will ramp down to 18 kcfs through May 22-24. Releases will rise again to full powerhouse when river temperatures reach 50 degrees F at Bonners Ferry.

Albeni Falls is at elevation 2057.9 feet, with inflows of 84 kcfs and releases of 68.9 kcfs. Dworshak is at elevation 1578.7 feet, with inflows of 26.9 kcfs and releases of 5.5 kcfs.

McNary daily average inflows are 333.9 kcfs. Bonneville daily average inflows are 341.7 kcfs. Lower Granite may have to go out of the 1-foot MOP range while researchers collect tailrace velocity data for the new outflow model.

Baus informed TMT of two recent Lower Snake River excursions from FOP prescribed spill and MOP operations:

On April 16, Lower Monumental pool dropped to 536.96 feet, four hundredths of a foot below MOP. The drop was caused by a sudden decrease in Little Goose discharges, which resulted in a 24 hour average spill level at LMN of 29.7 kcfs, below the 31 kcfs target gas cap level.

On April 7-8, Ice Harbor averaged spill of 62.9 kcfs instead of 63.1 kcfs, a 200 cfs reduction from the rate set in the FOP due to operational limitations on the hydro unit as the MW requirement was set.

**b. Fish. Adults:** Daily passage counts of spring chinook at Bonneville are 1000-1500, a rate well below the forecasted 2013 return of 170,000 fish and possibly even below the revised forecast of 100,000 fish. Spring chinook jacks, however, are 400% of average. Ocean conditions in themselves don't explain why this is such a disappointing year for chinook adult returns, Wagner said.

**Juveniles:** Daily passage counts of spring chinook may have peaked with counts of 200,000 fish on May 9 at Lower Granite, 300,000 fish on May 10 at Little Goose, and 70,000 fish on May 11 at Lower Monumental. These smolts are all on their way to Bonneville, which makes the powerhouse 2 operation urgent.

Steelhead subyearling passage is on the rise, if not peaking, with 160,000 passing Lower Granite on May 13, 230,000 passing Little Goose on May 14, and 90,000 passing Lower Monumental on May 14.

Sockeye passage is also on the rise, with 70,000 passing Bonneville and 63,000 passing Lower Granite after their May 9 release into the Snake River.

**c. Water Quality.** Currently there is involuntary spill with a few TDG exceedances on the system, Scott English, COE, reported. All fixed monitoring stations are operating.

**d. Power System.** There was nothing to report today.

## **6. Next TMT Meeting**

There will be a TMT conference call May 22, with Bonneville powerhouse 2 operations, Dworshak operations and the spill priority list on the agenda.

<b>Name</b>	<b>Affiliation</b>
Dave Statler	Nez Perce
John Roache	BOR
Jim Litchfield	Montana
Lisa Wright	COE
Paul Wagner	NOAA
Rick Kruger	Oregon
Erick Van Dyke	Oregon
David Wills	USFWS
Doug Baus	COE
Scott English	COE
Laura Hamilton	COE

Karl Kanbergs	COE
Agnes Lut	BPA
Dan Feil	COE
Bill Proctor	COE

*Phone:*

Charles Morrill	Washington
Scott Bettin	BPA
Tom Lorz	CRITFC/Umatilla
Ruth Burris	PGE
Kim Johnson	COE
Steve Hall	COE Walla Walla
Heather Dohan	Puget
Don Tinker	SCL
Bruce McKay	hydro consultant
Margaret Filardo	FPC
Dave Benner	FPC
Richelle Beck	Grant PUD
Russ Kiefer	Idaho
Russell Langshaw	Grant PUD

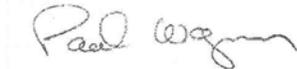
# SYSTEM OPERATIONAL REQUEST: #2013-1

*The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: National Marine Fisheries Service, US Fish and Wildlife Service, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Idaho Department of Fish and Game, the Colville Tribes, the Nez Perce Tribes, and the Columbia River Inter-Tribal Fish Commission.*

**TO:**

<b>Gen. Anthony Funkhouser</b>	<b>COE-NWD</b>
<b>Col. John Eisenhauer</b>	<b>COE-NWD</b>
<b>James D. Barton</b>	<b>COE-Water Management</b>
<b>Doug Baus</b>	<b>COE-RCC</b>
<b>David Poganis</b>	<b>COE-PDD</b>
<b>Karl Kanbergs</b>	<b>COE-NWD-NP-WM-RCC</b>
<b>Col. Bruce A. Estok</b>	<b>COE-Seattle District</b>
<b>Lorri Lee</b>	<b>USBR-Boise Regional Director</b>
<b>Bill Drummond</b>	<b>BPA-Administrator</b>
<b>Tony Norris</b>	<b>BPA-PGPO-5</b>
<b>Scott Bettin</b>	<b>BPA- KEWR-4</b>
<b>Steve Oliver</b>	<b>BPA-PG-5</b>
<b>Lori Bodi</b>	<b>BPA-KE-4</b>

**FROM:** Paul Wagner, FPAC Chair



**DATE:** April 23, 2013

**SUBJECT:** 2013 McNary Dam Summer Transport Operations

**OBJECTIVE:** Do not initiate summer transport operations at McNary Dam.

**SPECIFICATIONS:** Do not initiate summer transport from McNary Dam over migration year 2013.

**JUSTIFICATION:**

With regard to summer transportation at McNary Dam, the 2013 Fish Operations Plan (FOP) states:

Transportation will be initiated at McNary Dam between July 15–30 per the 2010 Supplemental BiOp (RPA 30, Table 4) and in coordination with NOAA Fisheries and the TMT. Fish will be transported from McNary Dam by barge through August 16, then transported by truck every other day. All fish collected will be transported except those

marked for in-river studies. Fish are expected to be transported through September 30. The presence of factors such as excess shad, algae or bryozoans that can clog screens and flumes may result in discontinuing transport operations at McNary Dam before September 30. Detailed criteria for McNary transport are contained in the FPP, Appendix B.

Transportation operations may be adjusted for research purposes, due to conditions at the collection facilities, or as a result of the adaptive management process (to better match juvenile outmigration timing and/or to achieve or maintain performance standards). If new information indicates that modifying (or eliminating) transportation operations at McNary Dam is warranted, adaptive management will be used to make appropriate adjustments through coordination with the FPOM/TMT.

The Salmon Managers recommend eliminating summer transport operations at McNary Dam in 2013. The most recent data on McNary summer transport is from the years 2001 and 2002. That data indicated a transport to inriver benefit ranging from 1.2 to 1.5 could occur during the mid-July to mid-August timeframe. Substantial improvements have been made to the McNary project and the projects down river which has resulted in increased survival at the projects as well as likely increases in reach survivals for inriver migrants which would reduce the transport benefit observed in those years. List of Improvements since 2002:

**McNary Dam:**

- 24 hours spill
- Relocated bypass outfall

**John Day Dam:**

- Top spill weirs
- Improved spill patterns
- Improved avian wire array
- 24 hours spill

**The Dalles Dam:**

- Spillway wall and associated improved spill patterns
- Improved ice and trash sluiceway chain gate opening patterns
- Improved avian wire arrays

**Bonneville Dam:**

- Second Powerhouse corner collector (surface bypass)
- Improved spill patterns (increased minimum openings)
- Increased spill volume
- Finished minimum gap runners at the First Powerhouse
- Improved ice and trash sluiceway flow, gate pattern and gate operation
- Filled holes and removed obstructions in spillway

**System:**

- Increased incentives and scope of Pikeminnow sport harvest reward program

In past years, the Region has maintained summer transport at McNary Dam primarily because of poor bypass performance at this project. However, in 2012, a new juvenile outfall was constructed at the McNary project that has improved survival at this project. Subyearling Chinook bypass survival was estimated at 94.6% in a single release study, which is a significant improvement over past years bypass survival (which ranged from 84.5% to 92.1%). The 2012 estimate was achieved despite high avian presence early in the subyearling migration season.

From a project safety perspective, there is a risk to the outfall if there is a problem with a barge operating in the relatively high flow and velocity conditions below this project. Eliminating summer transport would eliminate this risk. Current interruptions in spill and changes in the spill pattern required for the barge to dock at the juvenile facility (that do not favor fish passage) would also be eliminated.

The signatories to this SOR believe that, based on the improvements at McNary, John Day, The Dalles and Bonneville, the 96.2 % survival estimate for sub yearling chinook through the new McNary outfall, and the ongoing intensive sport reward harvest for northern Pikeminnow, that neither barge nor truck transport from McNary should be initiated in 2013.

### SPILL PRIORITY LIST Effective May 17 (TMT Coordinated 5/17)

If necessary to spill above FOP spill rates, the Action Agencies will incrementally increase spill at projects in the following priority order. This order is intended to manage TDG levels on a system-wide basis while prioritizing extra spill in a manner that provides the most benefit to fish passage. *The order of the eleven projects may be adaptively managed in-season based on feedback and recommendations from TMT.*

Level	Priority Order	Project	TDG %	Spill Cap Estimate (kcfs)
<b>LEVEL 1 – up to State TDG Standards <sup>1</sup></b>	01	LMN	120/115%	22 (Bulk)
	02	LMN	120/115%	30 (Uniform)
	03	LWG	120/115%	40
	04	LGS	120/115%	34
	05	IHR	120/115%	92 night / 75 day
	06	MCN	120/115%	175
	07	JDA	120/115%	140
	08	BON	120/115%	100
	09	TDA	120/115%	112
	10	CHJ	110%	21
	11	GCL	110%	0 (OT) or 30 (DG) <sup>2</sup>
	12	DWR	110%	30% of total river flow
<b>LEVEL 2 – removes downstream forebay restriction</b>	13	LMN	120%	44 (Uniform)
	14	LWG	120%	45
	15	LGS	120%	55
	17	IHR	120%	95 night / 75 day
	18	MCN	120%	209
	19	JDA	120%	146
	20	BON	120%	120
	21	TDA	120%	135
	22	CHJ	120% <sup>3</sup>	60
	<b>LEVEL 3</b>	23	LMN	122%
24		LWG	122%	52
25		LGS	122%	59
26		IHR	122%	95 night / 85 day
27		MCN	122%	185
28		JDA	122%	177
29		BON	122%	140
30		TDA	122%	160
31		CHJ	120%	115
32		GCL	115%	5 (OT) or 40 (DG)

**\*\*LEVELS 4-7 HAVE THE SAME ORDER.**

- 1.** During Fish Passage Season (Apr 1–Aug 31), state TDG standards are  $\leq 120\%$  in the tailrace or  $\leq 115\%$  at the next downstream forebay (whichever is more restrictive) for the eight Lower Snake and Lower Columbia fish passage projects, and  $\leq 110\%$  at all other projects.
- 2.** Spill at GCL is either through outlet tubes (OT) or drum gates (DG), depending on reservoir elevation. Spill through OT produces more TDG. Spill transitions to drum gates at forebay elevation of 1267-1270 feet.
- 3.** CHJ Level 2 spill shaped to 115% in the Wells Dam forebay, up to 120% in the CHJ tailrace, depending on anticipated duration.

## 2012-2013 Hanford Reach Fall Chinook Protection Program (HRFCPP)

### HRFCPP Lifestages

	Begin (000 hrs)	End (2400 hrs)
Spawning Period	10/24/2012	11/18/2012
Pre-Hatch Period	10/24/2012	1/22/2013
Post-Hatch Period	12/2/2012	4/25/2013
Emergence Period	3/2/2013	4/26/2013
Rearing Period	3/2/2013	6/1/2013

### ATUs (celcius)

	Initiation of spawning	through 05/14/13
<36 kcfs elevation	10/24/2012	1533.4
36-50 kcfs elevation	10/24/2012	1533.4
>50 kcfs elevation	10/31/2012	1435.7
End of spawning	11/18/2012	1186.4
Temperature on 05/14/13		11.3
Critical Elevation (kcfs)	65	

### HRFCPP Constraint dates

HRFCPP Section	Begin (000 hrs)	End (2400 hrs)	Current constraint as of 05/14/13
C.1(c)	10/24/2012	11/18/2012	
C.2	10/24/2012	12/1/2012	
C.3(a)	12/2/2012	3/1/2013	
C.3(b)	12/12/2012	3/20/2013	
C.4(a)	3/2/2013	4/26/2013	
C.4(b)	3/21/2013	4/26/2013	
C.5(b)(1-5)	3/2/2013	6/1/2013	Y
C.5(b)(6)	3/30/2013	4/21/2013	

### Current date

5/15/2013

### Data through:

5/14/2013

### Exceedances: 2

[Link to TU data](#)

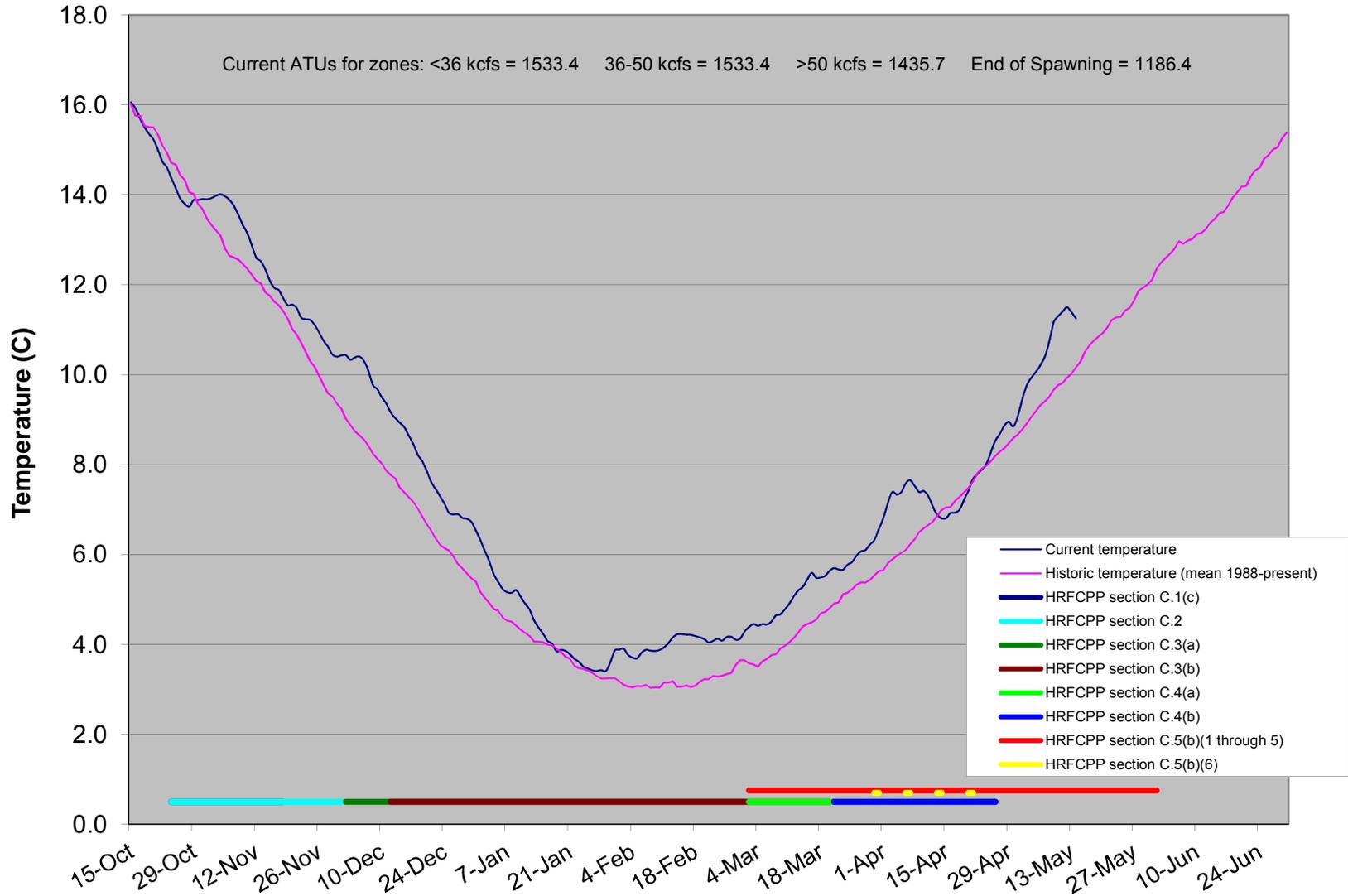
[Link to discharge data](#)

Cell are highlighted in yellow when ATU criteria are met.

Cell are highlighted in red when these constraints are currently in effect

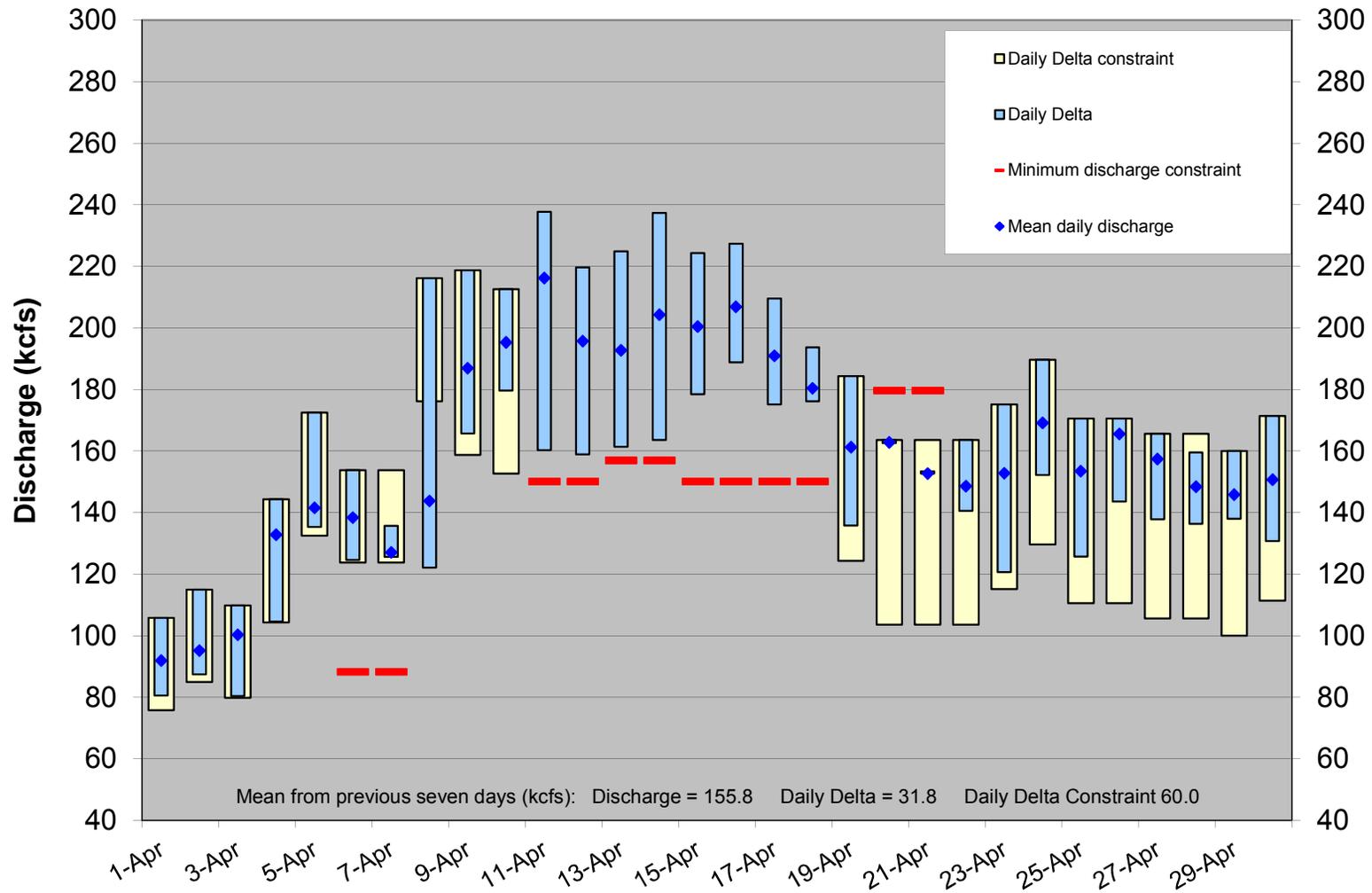
Dates with red text are predicted based on current conditions and data from 1988 to present

## 2012-2013 PRD Tailrace Temperatures and HRF CPP constraints



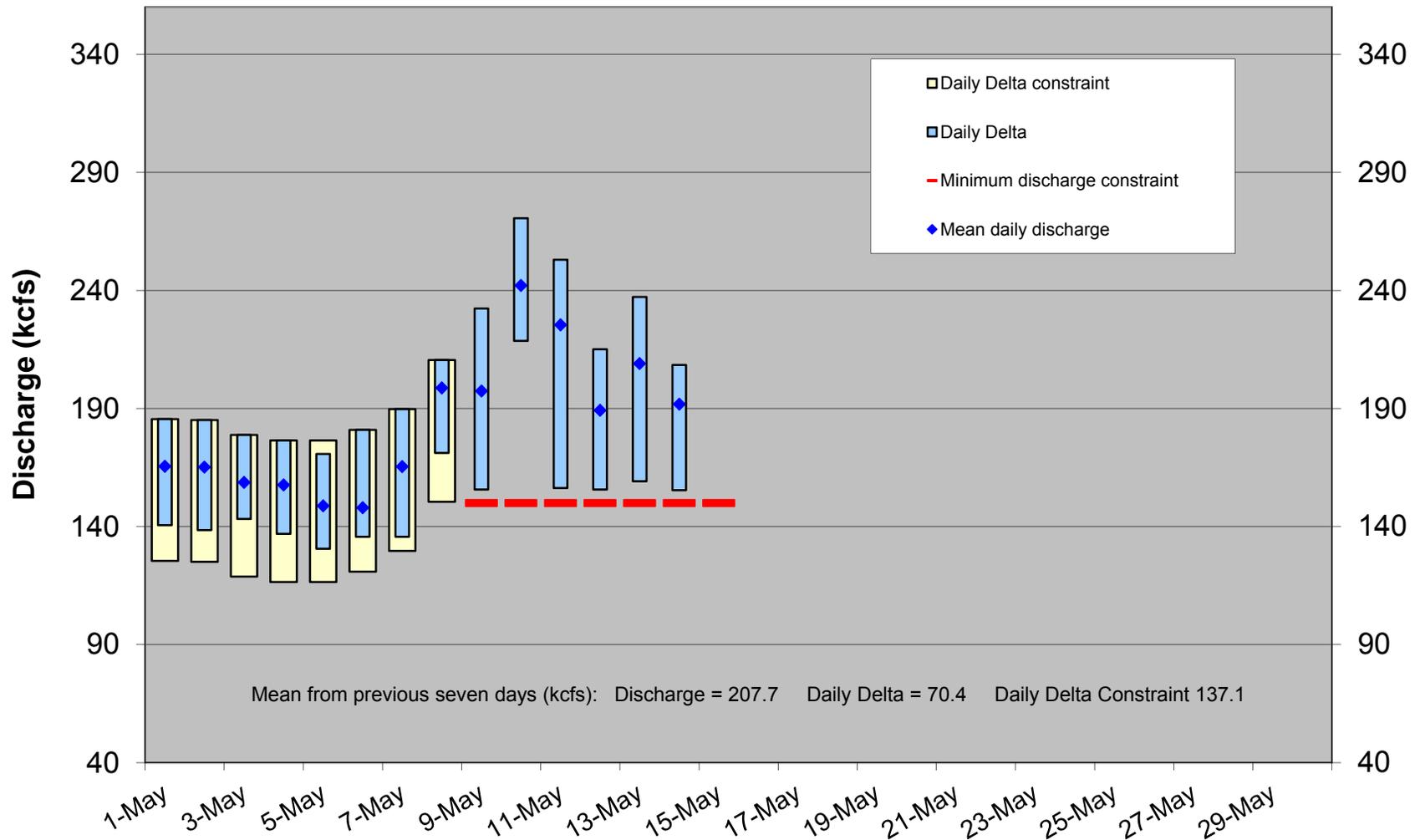
# Priest Rapids Dam Operations 2013

Number of exceedances: 1



# Priest Rapids Dam Operations 2013

Number of exceedances: 0



# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Domingue  
**OR:** Rick Kruger / Erick Van Dyke  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT CONFERENCE CALL

May 22, 2013 9:00am - 12:00pm

### CONFERENCE CALL INFORMATION

Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 6392

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnnv.net](mailto:rgumpert@cnnv.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

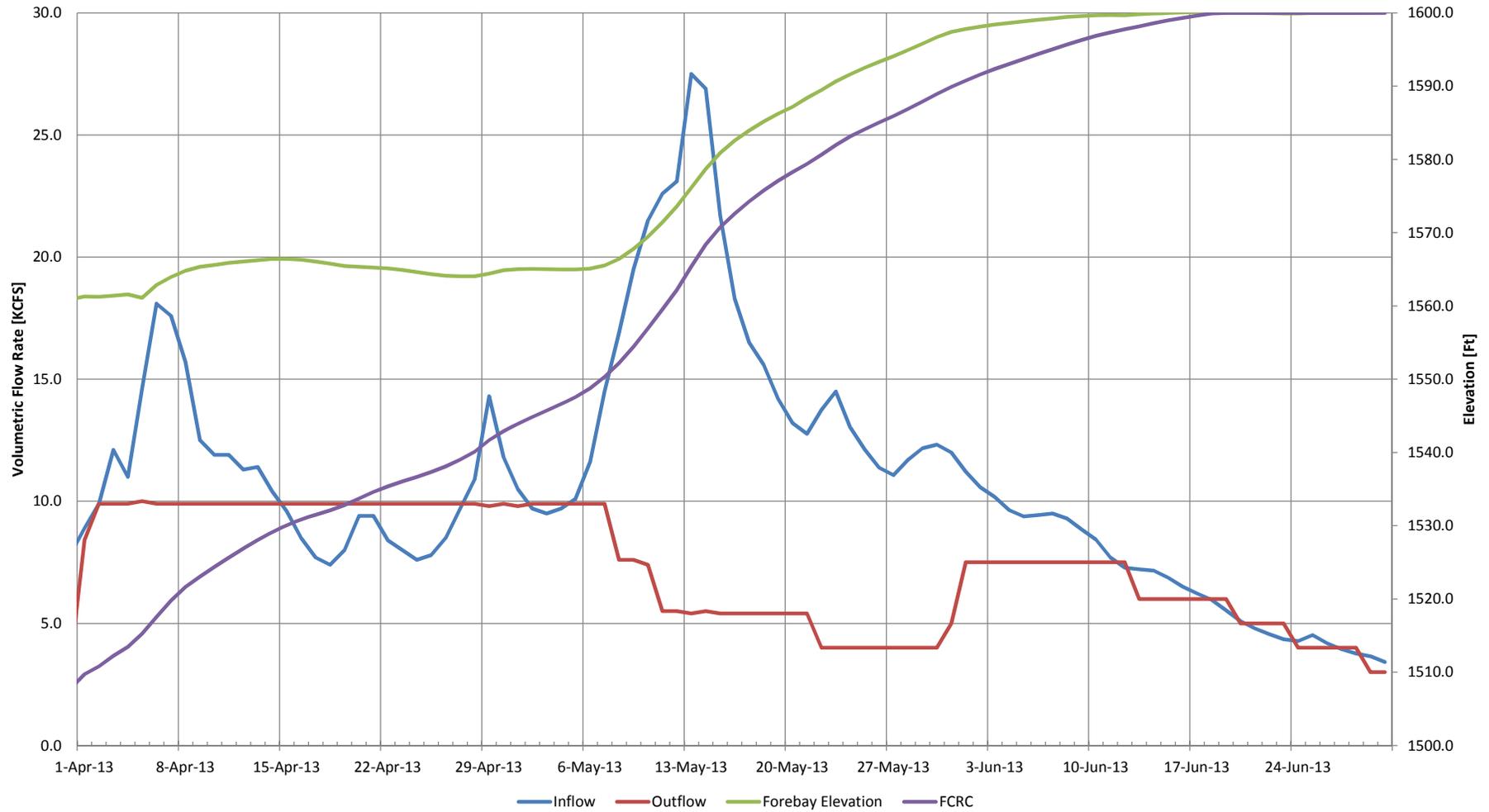
## AGENDA

1. Welcome and Introductions
2. Bonneville Dam Operations - Doug Baus, COE-NWD
3. Lower Monumental Dam - Paul Wagner, NOAA Fisheries and Doug Baus, COE-NWD
  - a. [Spill Operation](#)
4. Spill Priority List - Doug Baus, COE-NWD
  - a. [Performance Standard Testing](#)
5. Dworshak Operations - Steve Hall, COE-NWW
  - a. [Dworshak Operations, May 22](#)
6. Other
  - a. Set agenda and date for next meeting - **May 29, 2013**
  - b. [\[Calendar 2013\]](#)

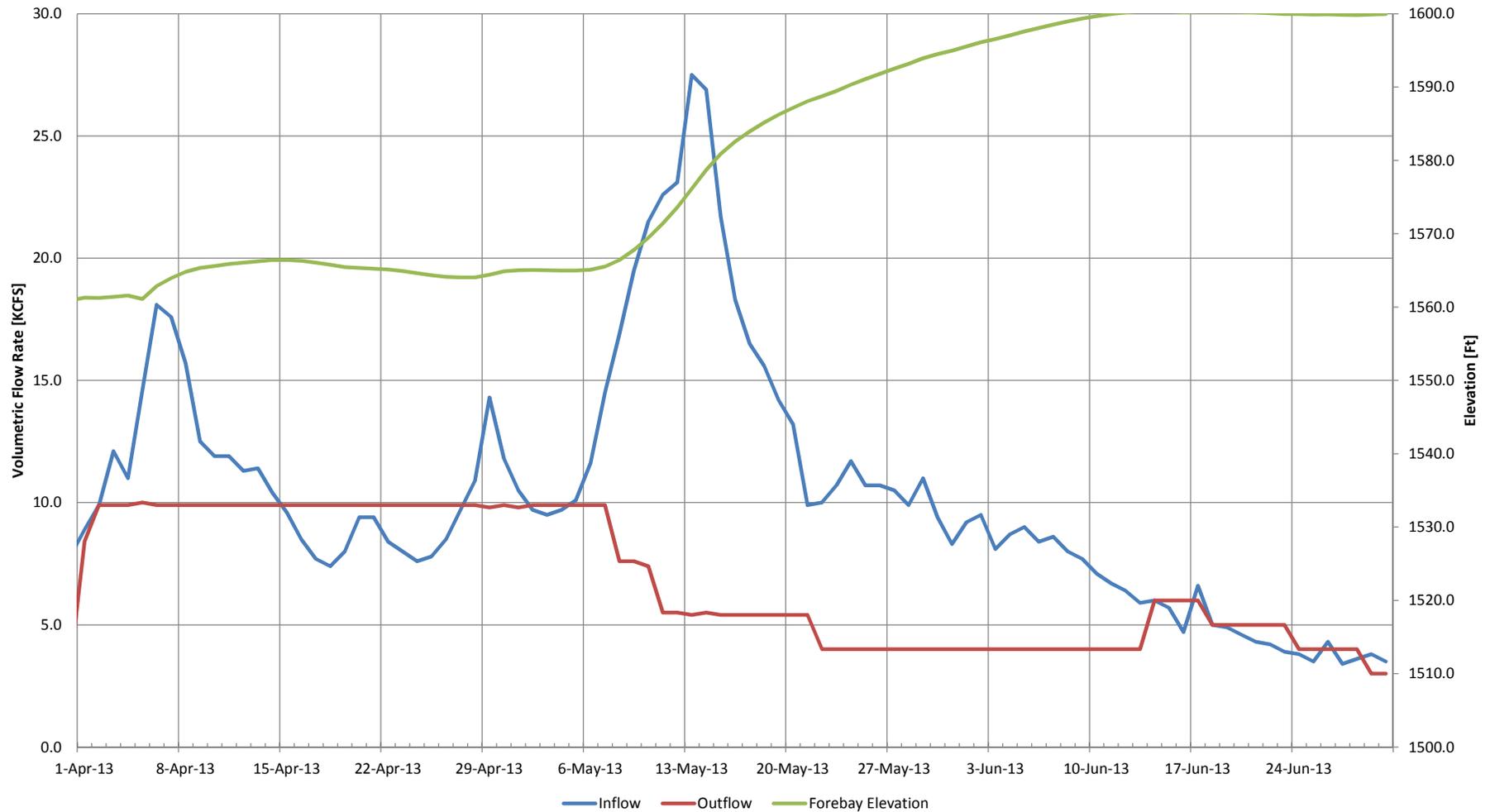
*Questions about the meeting may be referred to:*

*[Doug Baus](#) at (503) 808-3995*

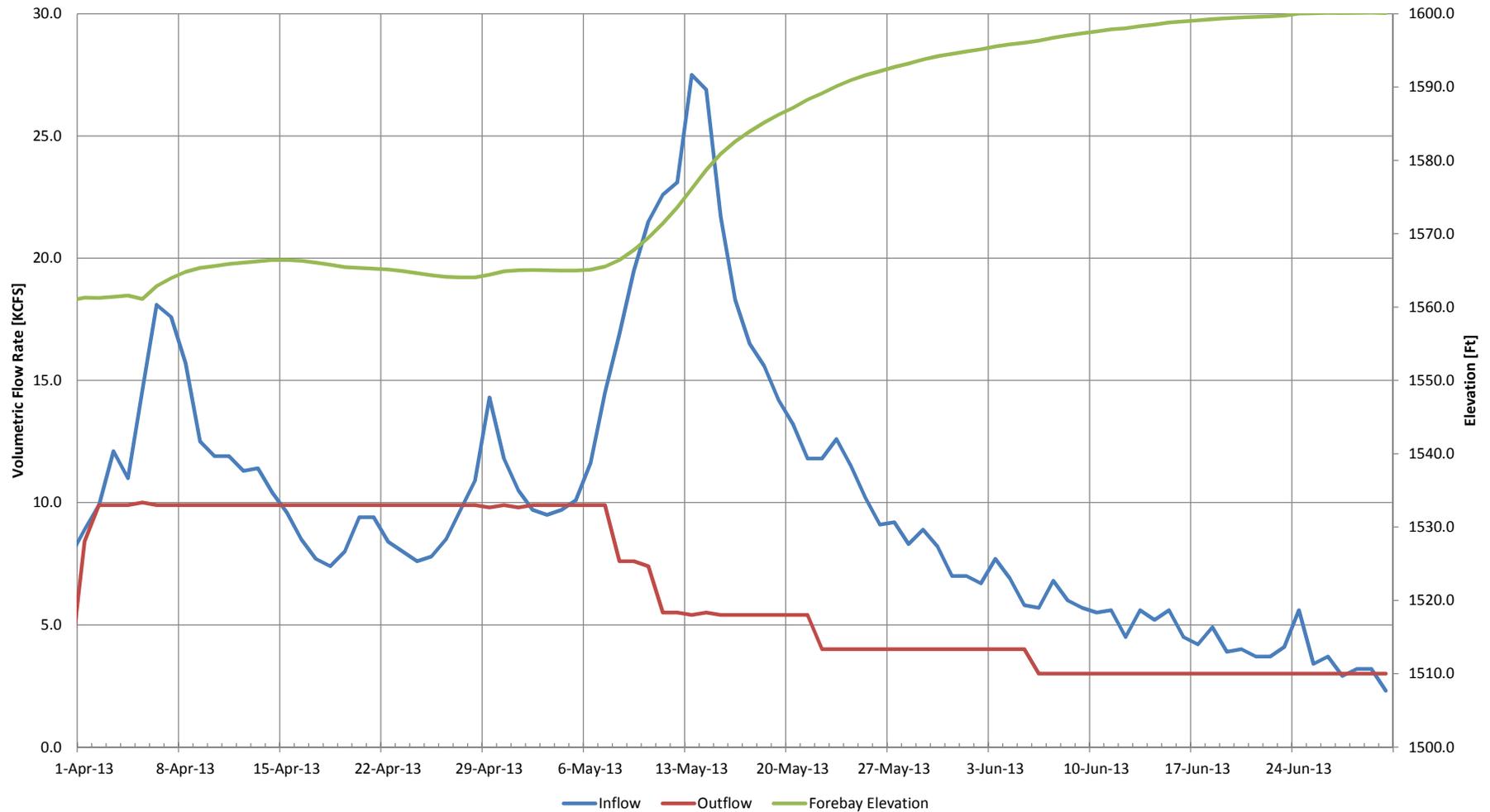
### DWR Regulation to fill by 1 July 2013 using STP Inflows



### DWR Regulation to fill by 1 July 2013 using 1988 Inflows



### DWR Regulation to fill by 1 July 2013 using 1993 Inflows



Lo Mo spill operation.

## Background

The Lower Monumental project has both a spring and summer spill operation for juvenile fish passage. The spring operation is to spill to the gas cap using the bulk spill pattern, which averages about 27 kcfs. The summer spill volume is 17 kcfs. The 2013 Fish Operations Plan (FOP) states the spring spill operation runs through approximately June 20 but also contains a provision for changing operations for research purposes. The research planned is performance standard testing at 17 kcfs spill at Lower Monumental Dam. The FOP states the dates of testing will depend on subyearling Chinook run timing and size and availability of fish for tagging. This date is likely earlier than June 20. The Corps has noted that making a transition to the 17 kcfs summer spill prior to June 20 is consistent with NMFS' FCRPS biological opinion language, which states that the actual start of summer spill will be initiated when subyearling Chinook exceed 50% of the collection for a 3 day period for each Snake River project after June 1 (RPA 29, Table 2, footnote 6). The Corps has indicated that applying the criteria stated in RPA 29 is required to conduct a valid performance test. This could result in the transition to 17 kcfs spill at early as June 3. The anadromous fish managers have expressed concern that transitioning to a lower spill volume prior to June 20 would not provide adequate protection for the spring juvenile migration. To address this concern, NMFS is proposing an alternative means for making the decision to transition from the spring to summer spill operation this year.

## Proposal

The operation proposed by the NMFS for the 2013 season is to base the transition from the spring to summer LoMo spill operation on a real time estimate of when 95% of the Snake River spring listed ESUs have passed the project.

An analysis of spring migrant run timing indicates that listed Snake River sockeye are typically the last ESU to pass in the spring, then wild yearling Chinook salmon, then wild steelhead (Table 1). During the years 2006 through 2012 the date at which the 95<sup>th</sup> percentile passage date at Lower Granite Dam has ranged from May 28 to June 15 (Table 1). Lower Granite Dam has been determined to be the best project to make an estimate of run timing because this project has the most consistent juvenile sampling and spill operations. This project is the first to begin both smolt monitoring and juvenile transportation. Also, spill at this project is fairly constant since it spills a fixed volume, fluctuating less than other lower Snake River projects. This relative consistency in operations allows for a better estimate of juvenile fish passage timing. The DART forecast tool will be used to make the 95% passage date estimate using PIT tagged sockeye, but all wild listed spring ESUs will be considered in this analysis. A fish travel time estimate from Lower Granite Dam to Lower Monumental Dam will be added to this date. During the June timeframe this travel time will be approximately 4 days. However, in no case will the switch from spring to summer operations at LoMo be made prior to June 4 (consistent with the operation contemplated in the 2008 FCRPS BiOp) or later than June 20, as agreed in the Court Order.

**Table 1. Date of 95th Percentile Passage Timing of PIT tagged juvenile salmon at Lower Granite Dam, 2006-2012.**

Source: Columbia River DART - Smolt Passage Predictions based on PIT Tag Detections for Snake River Stocks, May 1, 2013.

<b>YEAR</b>	<b>SR Sockeye (hatchery)</b>	<b>SR Steelhead (wild)</b>	<b>SR Yearling Chinook (wild)</b>	<b>Latest Date</b>
2006	NA	5/21	<b>6/09</b>	<b>6/09</b>
2007	<b>5/28</b>	5/26	5/23	<b>5/28</b>
2008	<b>6/09</b>	5/24	6/01	<b>6/09</b>
2009	<b>6/08</b>	5/30	5/31	<b>6/08</b>
2010	<b>6/15</b>	6/04	6/13	<b>6/15</b>
2011	NA	5/31	<b>6/07</b>	<b>6/07</b>
2012	NA	5/23	<b>6/06</b>	<b>6/06</b>
<b>Median</b>	<b>6/09</b>	<b>5/26</b>	<b>6/06</b>	<b>6/08</b>

Implications for Juvenile Dam Passage Performance Standard testing and future operations

If this operational protocol is adopted for use in future years, tagging of subyearling Chinook could begin when sufficient numbers are available at the tagging project because the subyearling Chinook migration would continue to occur during both the spring and summer spill period in the future. Only spill volumes in the “summer” period would be compared to the targeted (about 17 kcfs) spill volumes for the purposes of averaging in accordance with the JDPS Performance Standards paper.

If this operation is intended to more cleanly delineate that 17 kcfs of spill can meet performance standards for subyearling Chinook, and then fish releases should not occur until after spill levels are reduced for the summer period.

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 22, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Bonneville Dam Operation**

Doug Baus, Corps, reminded everyone that a request had been raised last week to implement operations per a draft FPOM FPP change form for operations at Bonneville PH 1 and PH 2 to address descaling issues. There were acute concerns that prompted a request for special operations. The action agencies responded with a revised operation to meet the need which was accepted by TMT with no objections. Doug described the past week's flow neutral operation: Approximately 9 kcfs flow reduction at PH 2 was offset by PH 1 (approximate 9 kcfs increase to achieve BOP);. The actual operation implemented was an approximate 6-9 kcfs flow neutral operation that reallocated flow from PH2 to PH1 in an effort to minimize descaling at PH2. Units 13, 14 and 18 were maintained at PH 2 targeting 1% mid-range; while units 12, 15, and 17 went to the upper 1% limit. Available units at PH1 were increased to BOP to offset the flow reduction at PH2. Tomorrow, Doug said, work on the 230 kV line at PH 1 could again limit the project's ability to implement this operation but the action agencies would do their best to implement while the project is under this limitation. The Corps project experts said they would like to keep some flexibility to manage debris in the system, and as yet debris was not a serious concern but could get worse. The issue was brought to TMT today to get guidance on next steps moving forward.

Paul Wagner, NOAA, responded that the salmon managers are concerned with the descaling rates which are still elevated. Yesterday sockeye descaling was 7.5%, and the day before was 14.4%. The current operation may have showed some benefit in reducing descaling but they are still seeing some variability. The sockeye continue to migrate so protections are needed; and Chinook and steelhead are also of concern. The salmon managers asked the action agencies again to consider whether more can be done given other requirements for managing TDG, including revisiting the specifics of the change form submitted to FPOM regarding Bonneville operations. At a minimum, they would like to continue with the current operation. Other options put on the table were to reduce discharges at Grand Coulee in the short term in order to decrease Bonneville Dam inflows. The action agencies said Grand Coulee reductions would be challenging due to flood control requirements. Another option was to remove the fish screens, which the salmon managers did not support yet without a debris issue.

Doug shared that the forecasts are showing continuing high inflows, so an additional stress on TDG would not be possible and therefore they could not at this time implement the change form operation while it was still being finalized.

**Planned Operation:** Given today's discussion, the Corps will operate to reduce flows across all units (or per Bonneville Fisheries expertise) at PH 2 to the extent possible at a rate that can be offset by PH 1 up to BOP. This slight revision was accepted by TMT and they asked that any issues that come up outside the planned expectations should be conveyed via email to the TMT. Some salmon managers expressed disappointment that the proposed change form with broad regional support was not able to move through in enough time to get implemented this year, limiting the options on the table. They would like to stay apprised of the FPOM process. Tammy Mackey, Corps/FPOM Chair, confirmed that support from Idaho, Washington and Oregon received at today's TMT meeting for the change form will set in motion submittal of the form for FPOM review and it will be revisited for decision at the next, June 13, FPOM meeting. TMT will discuss Bonneville operations at their next, 5/29, TMT meeting.

### **Lower Monumental Spill**

Paul Wagner, NOAA, shared a memo with a proposal for identifying criteria for determining a switch from spring to summer spill at Lower Monumental, using a 95% passage indicator of spring fish per daily DART forecasts. This was in response to discussions held at TMT on 4/24 about the Corps' plan for a summer performance standard test using guidance from the FOP. The salmon managers were not in support of Paul's proposal, but he wanted to share and discuss further with TMT today.

Oregon, based on a read of the NOAA methodology, objected to the application of the 95% criteria because the later migrating fish are typically not tagged and therefore not considered in making that determination. Tom Lorz, CRITFC/Umatilla, agreed that this is not an effective tool for determining passage, and it would bias the estimate to an earlier than actual passage. The default for determining spring to summer spill operations transition, then, would rest on the FOP guidance which the Corps said it will use in the absence of a regional consensus on NOAA's alternative proposal. Given that, Rick Kruger, Oregon, said he would object to any change from spring to summer spill before June 20. If the FOP guidance implicated an earlier change, Oregon would object. He also said he ran an analysis of this and would share it with TMT.

**Next Steps:** Rick will share his analysis with TMT and he and Corps RCC staff will have a follow up technical review about the implications for this year. TMT members would like to know the Action Agencies' planned operation based on forecasts and current data, as soon as possible. There is a possibility that Oregon and/or others will object and elevate this issue beyond TMT; as such, TMT members will notify their Senior Hydro Team representatives that they may be convened in the near term to discuss and help frame up for RIOG decision. Robin Gumpert, Facilitator, will work with Oregon and others to determine the process next steps and if requested, assist in framing up the question for discussion at the Senior Hydro Team. TMT will receive email communication about the process next steps if any before the next TMT meeting on 5/29.

### **Dworshak Operation**

Steve Hall, Walla Walla Corps, shared graphs linked to today's agenda, showing the latest STP run and operation moving forward. He also showed graphs of 1988 and 1993 historic inflow traces as a historic

comparison of what might occur this year in terms of operations. Based on these historic views and with an eye toward refill, the Corps reduced outflows from 5.5 kcfs to 4 kcfs and plans to continue for the next week. Steve said this was a prudent move given a strong preference (particularly from Nez Perce Tribe) to avoid the need to reduce outflows to 1.5 kcfs later during warmer months in order to refill. Tom Lorz, CRITFC/Umatilla, and others shared their preference for discussing the proposed operation change prior to making this decision; Tom expressed some concerns for reducing outflows given spring migrants are passing the project right now. That said, no TMT members objected to the next week operation plan of continuing at 4 kcfs. TMT will revisit this issue next week at the 5/29 TMT meeting. If the Corps is looking to make a change before then, they will do their best to communicate with TMT in advance and allow for some feedback in to the decision making.

### **Spill Priority List**

Doug Baus, Corps, shared the proposed spill priority list for the performance standard test period (starting on approximately June 1). The salmon managers will review and revisit this issue again next week prior to implementation if they would like to offer any proposed revisions.

### **Next Meeting, May 29 face to face**

Agenda items include:

- Dworshak Operations
- Bonneville Operations
- Lower Monumental Spill/Performance Standard Testing
- Spill Priority List (tentative)
- Coordination of Hatchery Releases
- Other?

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

May 22, 2013

Notes: Pat Vivian

#### **1. Introduction**

Today's TMT conference call was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of NOAA, Oregon, Washington, USFWS, Montana, BOR, the COE, Nez Perce Tribe, BPA, CRITFC/Umatilla Tribe, Idaho and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### **2. Bonneville Dam Operations**

During the May 15 TMT meeting the Action Agencies (AAs) received a request from FPAC to implement the draft Fish Passage Plan change form (14BON001 Table BON-16 Add Mid-Range) regarding operations of Bonneville Dam Powerhouse 1 (PH1) and 2 (PH2). The change form modifies current operations at PH1 and PH2 in an effort to minimize descaling at PH2.

The AAs did not implement the draft change form during this meeting but the TMT settled on a flow-neutral operation to minimize descaling at PH2 by decreasing flows to approximately 9 kcfs, with an equivalent increase in flows at PH1 by operating at best operating point (BOP). The AA's were able to implement the flow-neutral operation for the following reasons: 1) it is flow neutral and consistent with the operation implemented in 2012, 2) it does not conflict with the Corps requirement to minimize TDG downstream of Bonneville Dam, and 3) maintains spill rate identified in the FOP. Last week TMT identified PH2 units #13, 14 and 18 to operate at the targeted 1% midrange for fish passage in an effort to minimize descaling.

Baus asked TMT members for feedback on that operation, which was set to expire today.

FPAC is concerned because the rate of descaling is still elevated, with 7.5% of sockeye descaled yesterday and up to 15% in preceding days, Paul Wagner, NOAA, said. Continuing the current operation would therefore be desirable. Given the high rates of descaling and current TDG levels at the project, Wagner asked, can more be done?

In response to this question, TMT explored the possibility of reducing Grand Coulee discharges. That is not feasible due to flood control requirements, Tony Norris, BPA, said. The increasing inflow forecast might make it difficult to meet the gas standard and reduce flows, Charles Morrill, Washington, noted. Norris asked whether the fish screens should be pulled. Not unless debris is a problem, Tom Lorz, CRITFC/Umatilla, said.

During the May 15 TMT meeting the AAs indicated that given current PH1 unit availability and capacity, this operation would involve an approximate 9 kcfs reduction in flows at PH2 by operating PH1 units at BOP, Baus said. After reviewing the data on the operation coordinated since May 15 it appears that the actual operation implemented involved the reallocation of approximately 6-9 kcfs from PH2 to PH1. The 3 units at PH2 that were operated at the midpoint for this operation were units 13, 14, and 18.

Jon Rerecich, COE, suggested spreading the reduction out among all available PH2 units, and giving Bonneville fisheries staff the flexibility to modify operations in response to debris levels and real time conditions at the project for a future operation and not specifically targeting 3 units as previously coordinated. He reported that yesterday the Vertical Barrier Screens (VBSs) were cleaned and debris levels were low. Current data do not indicate a direct correlation between cleaning the VBSs and decreased rates of descaling. At present PH2 is discharging 75-80 kcfs, which would put all units below the midrange of 1%. NOAA's preference is to keep them there, Wagner said. Lorz said further plans should take into account the dates when units now down for maintenance will return to service. Unit 16 at PH2 is scheduled to come back online June 23, and unit 8 at PH1 as soon as tomorrow.

Wagner asked, would the Action Agencies operate the PH2 units to a hard constraint of the midrange of 1%, even if it causes TDG levels in the tailrace to exceed 120%? At this time it is unlikely the AAs would implement this request, Baus replied. Implementing the draft change form involves significant operational changes at Bonneville Dam. Until these changes are coordinated with AA legal and policy staff we, the Corps is unable to implement the specific operation identified in the draft change form. Although the draft change form has not been finalized through FPOM, the AAs are still able to implement the flow neutral operation discussed today as it is consistent with the flow neutral operation implemented in 2012.

For the record, **Oregon, Idaho and Washington** all expressed support today for the change form as submitted to FPOM. While there was no official poll on this operation today, the Salmon Managers gave their views of the current situation:

- **Idaho** – Sockeye suffer the highest descaling rates, but steelhead and chinook are also being harmed by turbulence in Bonneville PH2. The current situation is disappointing because a lot of work over the past year has gone into figuring out an effective solution to turbulence in the Bonneville gatewells, but current policy leaves the Salmon Managers with limited options in a period of significant descaling.
- **NOAA** – The current sockeye descaling rate is around 7-10%. Assurance is needed from the Action Agencies that current rates of descaling will not increase. A rate of 20% is considered a red flag.

- **Washington** –Any action that will bring descaling rates down to a background level is warranted.
- **CRITFC/Umatilla** – Project staff need the flexibility to take corrective actions because it's part of their job. The Salmon Managers ask only to be notified of actions taken. CRITFC will not object if a decision is made to spread out the flow reduction across all PH2 units.
- **Nez Perce** – Because forecasts change all the time, chances are the same problem will arise next year. The situation is critical and calls for extraordinary measures beyond business as usual. The Action Agencies should keep TMT informed of implementation of the FFP change form.

Tammy Mackey, COE, explained the next steps in the change form implementation process. After reviewing the request, the AAs will respond and resubmit the change form to FPOM at the next FPOM meeting June 13. Unless there is a policy resolution before then, the COE anticipates a lack of consensus will emerge at the FPOM meeting. That would result in elevating the issue to RIOG and the senior hydro team for a final decision.

Meanwhile, Baus outlined what the Bonneville operation will be for the next week: reduce flows at BON PH2 to a rate that can be offset by PH1 units operating at BOP. The flow reduction at PH2 will be spread among all units or as specified by Bonneville project staff to reduce descaling. TMT will revisit this issue in June after FPOM's next meeting.

### ***3. Lower Monumental Spring/Summer Operations***

As defined in the BiOp, summer spill typically starts after June 1 based on subyearling run-timing observed at the juvenile monitoring facility, Dan Feil, COE, said. The FOP has a hard start date of "approximately June 21" for summer operations at Lower Monumental. However, in light of performance testing scheduled for Lower Monumental this year, summer spill could start any time after June 3.

In response to COE concerns about obtaining valid test results at a consistent summer spill level of 17 kcfs under this operation, NOAA has put forth a proposal based on the estimated 95% passage date of spring fish, Wagner said. Under the NOAA proposal, the project would switch to summer spill when 95% of the ESA-listed Snake River spring ESUs have passed Lower Granite Dam, as adjusted for travel time to Lower Monumental Dam.

The NOAA proposal, however, was not supported by the other Salmon Managers, mainly due to concerns about the methodology used. They voiced their concerns today:

- **Oregon** – Objects to use of this methodology because of difficulties getting a representative tagging sample. The 95% passage date for spring fish is based on only 80% of the run. Unless tagging continues until the run ends, the data will always be skewed toward an earlier end date than actually occurred. Oregon has compelling information that supports spilling as much as possible for spring migrants, and there's no reason to reduce spill before June 21 to obtain a valid test. Oregon's data indicate the performance study objectives can be achieved without reducing spill at Lower Monumental to 17 kcfs before June 21. In addition to objecting to the use of this methodology to determine the start date of summer spill, Oregon would object to the reduction in spill at Lower Monumental before June 21.
- **CRITFC/Umatilla** – The process of using the 95% passage date as a trigger for summer flows is not a bad one, but the methodology is flawed and should not be used to make management decisions.
- **Washington** – The proposed methodology raises questions about tagging. A better strategy/methodology is needed. Higher spill at this time of year for spring migrants is an important component of the BiOp. The Action Agencies' desire for a lower spill summer operation is of major concern to the Salmon Managers.
- **Idaho** – The performance standard test is of the ESU, not of the planned spill operation. Last year, performance standards tests were conducted successfully under flow conditions that exceeded 17 kcfs releases until later than anticipated. The same could be done this year.

Baus said the COE will take the Salmon Managers' feedback into account in managing Lower Monumental spring/summer spill operations. Feil said the COE's primary concern is to get valid performance test results to satisfy its BiOp requirements. The COE will follow the FOP, which establishes a hard start date of June 21 for summer spill, and will coordinate with the region to adjust the start date of the test to run timing.

The Action Agencies will discuss the 95% passage date proposal with NOAA and inform TMT of the outcome. Depending on the technical exchange of information between Oregon and the COE after this meeting, this issue could be elevated to RIOG and the senior hydro team for resolution. TMT will revisit this issue in its next meeting May 29.

#### ***4. Dworshak Operations***

Steve Hall, COE Walla Walla, presented three graphs linked to today's agenda. The first graph shows the STP run for this week. The COE cut Dworshak outflows this morning to 4 kcfs and plans to hold that level through the end of the month. If future STP runs show increased inflows, discharges might be increased to 7 kcfs until the reservoir reaches full around June 11-12.

Based on the amount of residual runoff in the basin, around 1 MAF of runoff is left to come, Hall said. The second and third graphs depict Dworshak operations based on two similar years, 1988 and 1993.

The 1988 inflow trace is probably several hundred KAF greater than residual runoff volumes now, Hall said. Current inflows have been trending lower than the STP forecast. To get the reservoir to full on the basis of 1988 inflows under this scenario, it would be necessary to cut releases to 4 kcfs and maintain that until the end of refill operations around the middle of June. At that time discharges would be increased to 6 kcfs for a few days and follow the hydrograph down.

The 1993 inflow trace serves as a worst case scenario for this year. In this case, the project would release 4 kcfs through about June 4-5, then reduce discharges to 3 kcfs and would barely refill by the end of June.

Based on both of these scenarios, the COE decided to reduce discharges to 4 kcfs beginning this morning, Hall said. Wagner and Lorz both said it would have been preferable to wait 24 hours and discuss the change to 4 kcfs before a decision was made. Lorz expressed concern that a large number of subyearlings have just been released into the Snake River and flows are dropping, so this was not the best time to cut Dworshak releases.

Russ Kiefer said Idaho did not object to the current operation. Hall said the COE acted in response to changing conditions because regional stakeholders have said that consistently refilling on minimums is undesirable. The Nez Perce Tribe has recently raised this as an issue. The COE's purpose of reducing outflows to 4 kcfs was to keep an influx of cool water flowing into the Snake River when summer heats up.

The current Dworshak operation will continue for at least another week. TMT will revisit this issue in its May 29 meeting.

## ***5. Spill Priority List***

With performance standards testing planned at Little Goose and Lower Monumental Dams this summer, the Action Agencies want to move those projects lower on the spill priority list, Baus said.

The proposed list is posted to today's agenda. Level 1 priorities are: 1. Lower Granite; 2. Ice Harbor; 3. McNary; 4. John Day; 5. The Dalles; 6. Bonneville; 7. Lower Monumental; 8. Little Goose; 9. Chief Joseph; 10. Grand Coulee; 11. Dworshak. This spill priority list would apply from June 1 to approximately June 15. The start date may be adjusted to accommodate performance standard testing.

TMT members present gave feedback on the proposed list, assuming there will be an opportunity to talk about it next week before it goes into effect:

- **CRITFC** – No objection to the proposed priority. Suggests moving Little Goose down starting June 1 until official data indicate it's time to switch to summer spill.
- **NOAA** – No objection, assuming there will be another opportunity for discussion.

If TMT members have any additional comments on the spill priority list they may bring them up during the next TMT meeting on May 29.

## **6. Next TMT Meeting**

TMT will meet next in person on May 29. The agenda will include Dworshak, Bonneville and Lower Monumental operations, the spill priority list, coordination of hatchery releases, and the usual operations review.

<b>Name</b>	<b>Affiliation</b>
Paul Wagner	NOAA
Rick Kruger	Oregon
Charles Morrill	Washington
David Wills	USFWS
Jim Litchfield	Montana
John Roache	BOR
Doug Baus	COE
Dave Statler	Nez Perce
Agnes Lut	BPA
Steve Lyman	PGE
Tony Norris	BPA
Heather Dohan	Puget
Tom Lorz	Umatilla
Shane Scott	PPC
Richelle Beck	Grant PUD
Barry Espenson	CBB
Margaret Filardo	FPP
Lisa Wright	COE
Karl Kanbergs	COE
Bill Proctor	COE
Laura Hamilton	COE
XX	Snohomish
Russ Kiefer	Idaho
Jon Rerecich	COE
Tammy Mackey	COE

**DRAFT SPILL PRIORITY LIST Effective Approximately June 1 (start date may be adjusted to accommodate performance standard testing) through June 15**

If necessary to spill above FOP spill rates, the Action Agencies will incrementally increase spill at projects in the following priority order. This order is intended to manage TDG levels on a system-wide basis while prioritizing extra spill in a manner that provides the most benefit to fish passage. *The order of the eleven projects may be adaptively managed in-season based on feedback and recommendations from TMT.*

Level	Priority Order	Project	TDG %	Spill Cap Estimate (kcfs)
<b>LEVEL 1 – up to State TDG Standards <sup>1</sup></b>	01	LWG	120/115%	40
	02	IHR	120/115%	92 night / 75 day
	03	MCN	120/115%	182
	04	JDA	120/115%	142
	05	TDA	120/115%	120
	06	BON	120/115%	98
	07	LMN	120/115%	26 (Bulk)
	08	LGS	120/115%	38
	09	CHJ	110%	21
	10	GCL	110%	0 (OT) or 30 (DG) <sup>2</sup>
	11	DWR	110%	30% of total river flow
<b>LEVEL 2 – removes downstream forebay restriction</b>	12	LWG	120%	45
	13	IHR	120%	92 night / 75 day
	14	MCN	120%	209
	15	JDA	120%	146
	16	TDA	120%	135
	17	BON	120%	120
	18	LMN	120%	44
	19	LGS	120%	55
	21	CHJ	120% <sup>3</sup>	60
<b>LEVEL 3</b>	22	LWG	122%	52
	23	IHR	122%	92 night / 85 day
	24	MCN	122%	185
	25	JDA	122%	177
	26	TDA	122%	160
	27	BON	122%	140
	28	LMN	122%	60
	29	LGS	122%	59
	30	CHJ	120%	115
	31	GCL	115%	5 (OT) or 40 (DG)
<b>LEVEL 4</b>	32	LWG	125%	63
	33	IHR	125%	110
	34	MCN	125%	230
	35	JDA	125%	190
	36	TDA	125%	269

Level	Priority Order	Project	TDG %	Spill Cap Estimate (kcfs)
	37	BON	125%	215
	38	LMN	125%	80
	39	LGS	125%	70
	40	CHJ	122%	160
	41	GCL	120%	15 (OT) or 50 (DG)
LEVEL 5	42	LWG	127%	85
	43	IHR	127%	124
	44	MCN	127%	280
	45	JDA	127%	206
	46	TDA	127%	294
	47	BON	127%	234
	48	LMN	127%	120
	49	LGS	127%	95
	50	CHJ	125%	190
	51	GCL	122%	20 (OT) or 60 (DG)
LEVEL 6	52	LWG	130%	90
	53	IHR	130%	145
	54	MCN	130%	321
	55	JDA	130%	250
	56	TDA	130%	360
	57	BON	130%	250
	58	LMN	130%	180
	59	LGS	130%	125
	60	CHJ	127%	250
	61	GCL	125%	25 (OT) or 80 (DG)
LEVEL 7	62	LWG	135%	200
	63	IHR	135%	240
	64	MCN	135%	375
	65	JDA	135%	300
	66	TDA	135%	400
	67	BON	135%	300
	68	LMN	135%	250
	69	LGS	135%	177
	70	CHJ	130%	280
	71	GCL	130%	42 (OT) or 120 (DG)

1. During Fish Passage Season (Apr 1–Aug 31), state TDG standards are  $\leq 120\%$  in the tailrace or  $\leq 115\%$  at the next downstream forebay (whichever is more restrictive) for the eight Lower Snake and Lower Columbia fish passage projects, and  $\leq 110\%$  at all other projects.

2. Spill at GCL is either through outlet tubes (OT) or drum gates (DG), depending on reservoir elevation. Spill through OT produces more TDG. Spill transitions to drum gates at forebay elevation of 1267-1270 feet.

3. CHJ Level 2 spill shaped to 115% in the Wells Dam forebay, up to 120% in the CHJ tailrace, depending on anticipated duration.

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Domingue  
**OR:** Erick Van Dyke  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Deanne Pavlik-Kunkel / Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

Wednesday May 29, 2013 9:00am - 12:00pm

1125 N.W. Couch Street, Suite 500, Columbia Room  
Portland, Oregon 97209-4142  
Map Quest [\[Directions\]](#)

**TMT MEETING**  
Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 0735

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnmv.net](mailto:rgumpert@cnmv.net) or call her at (503) 248-4703.*

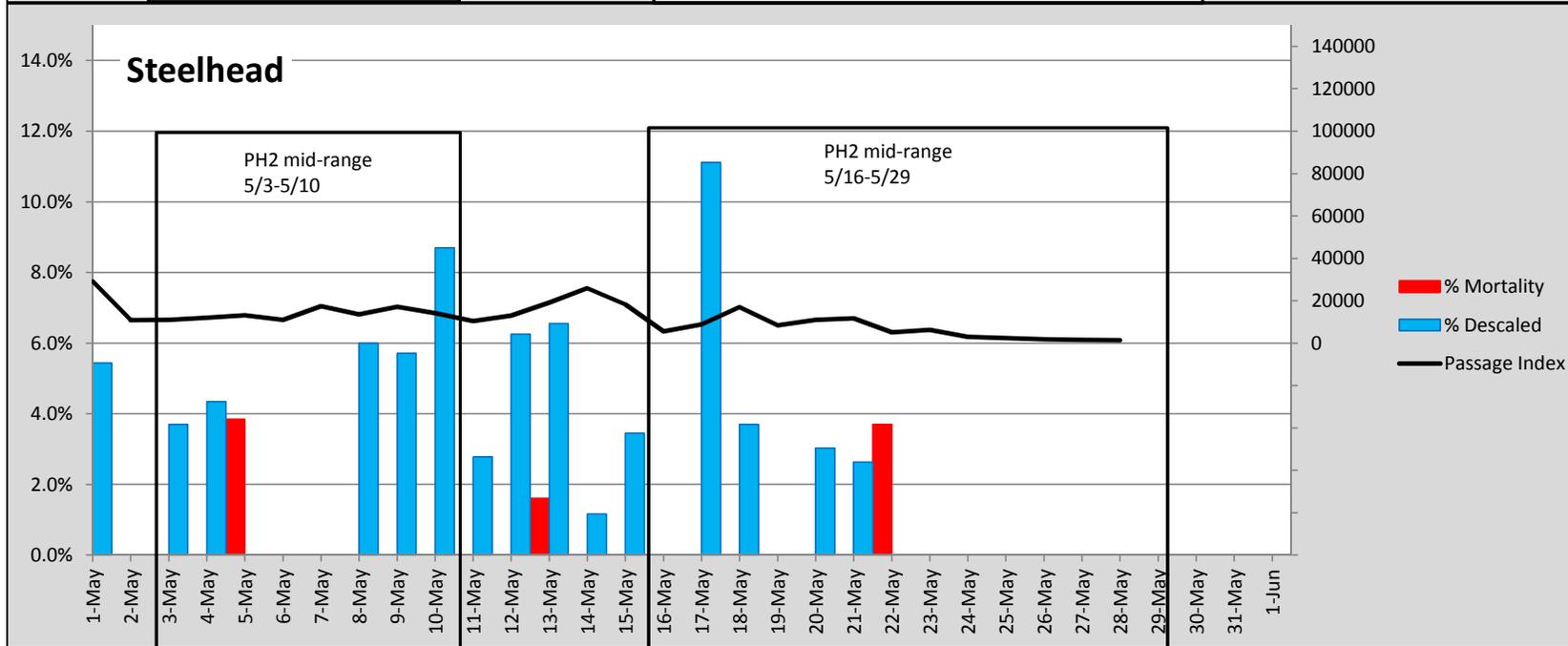
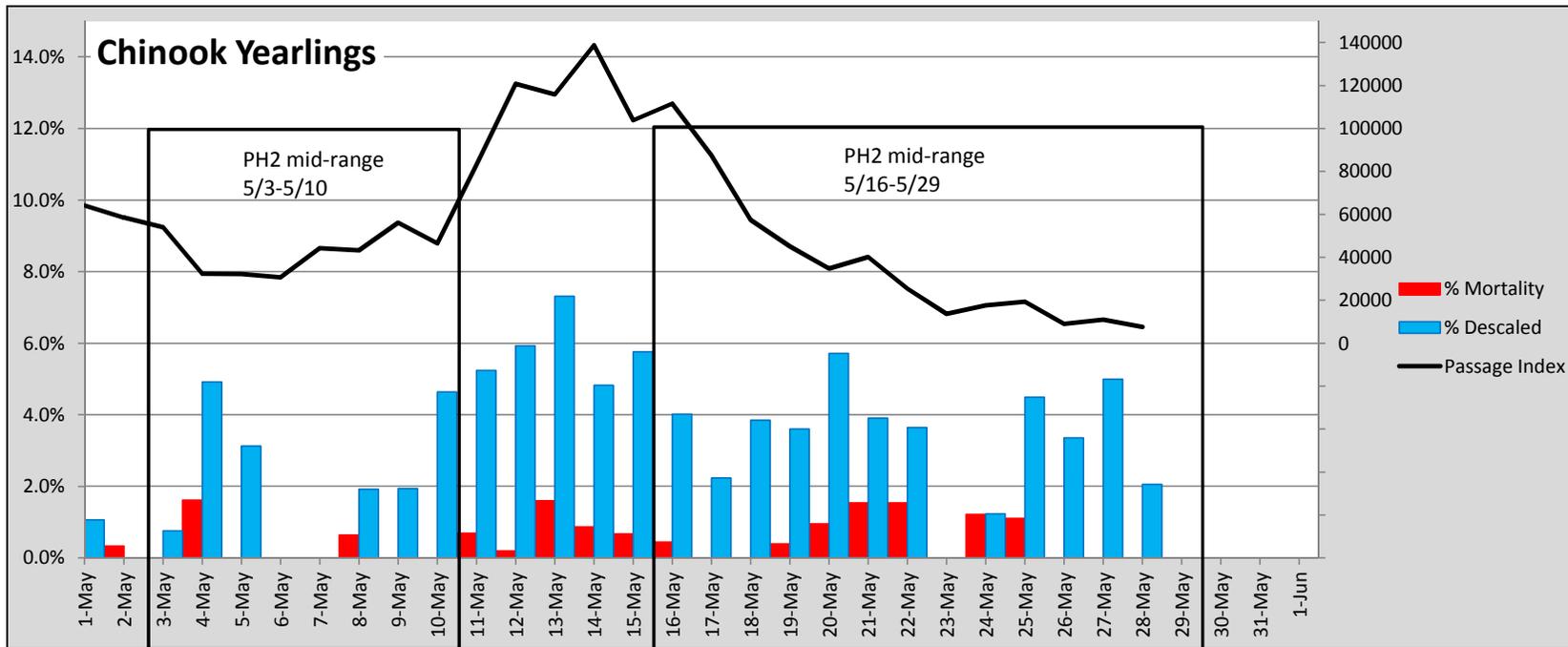
*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

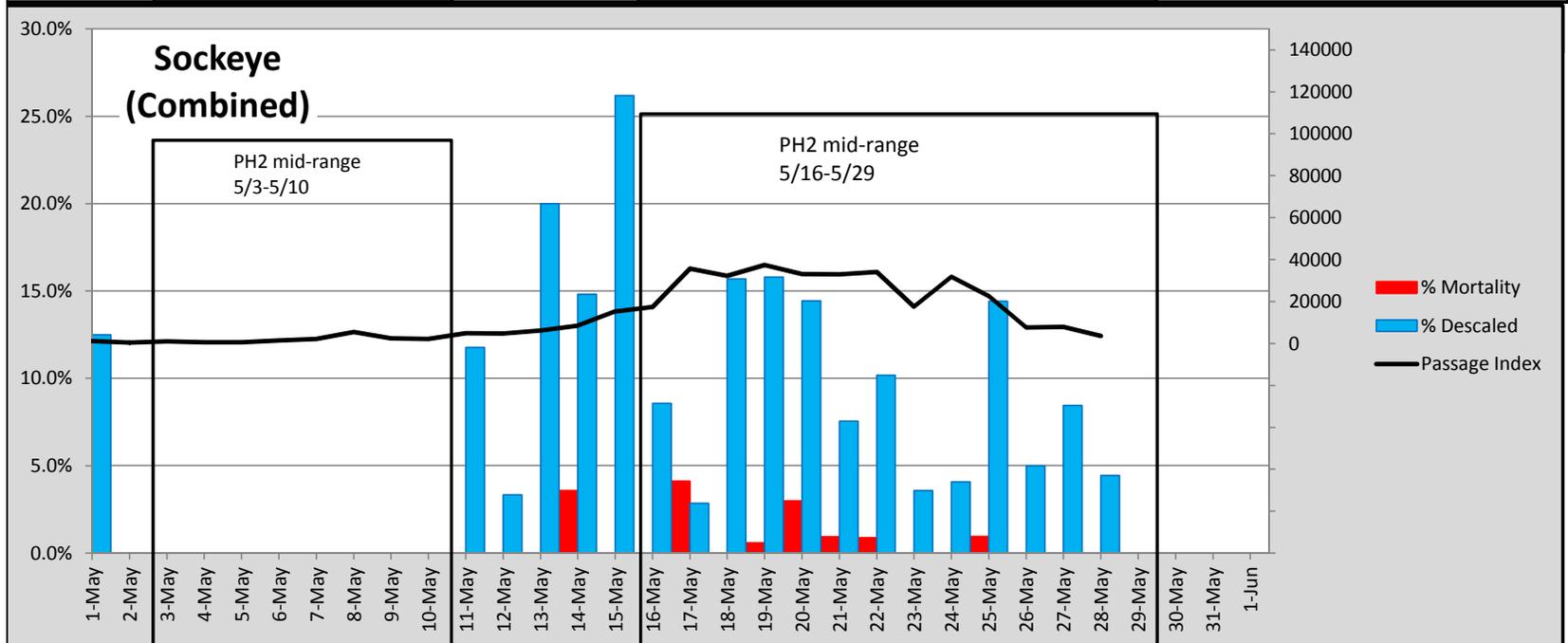
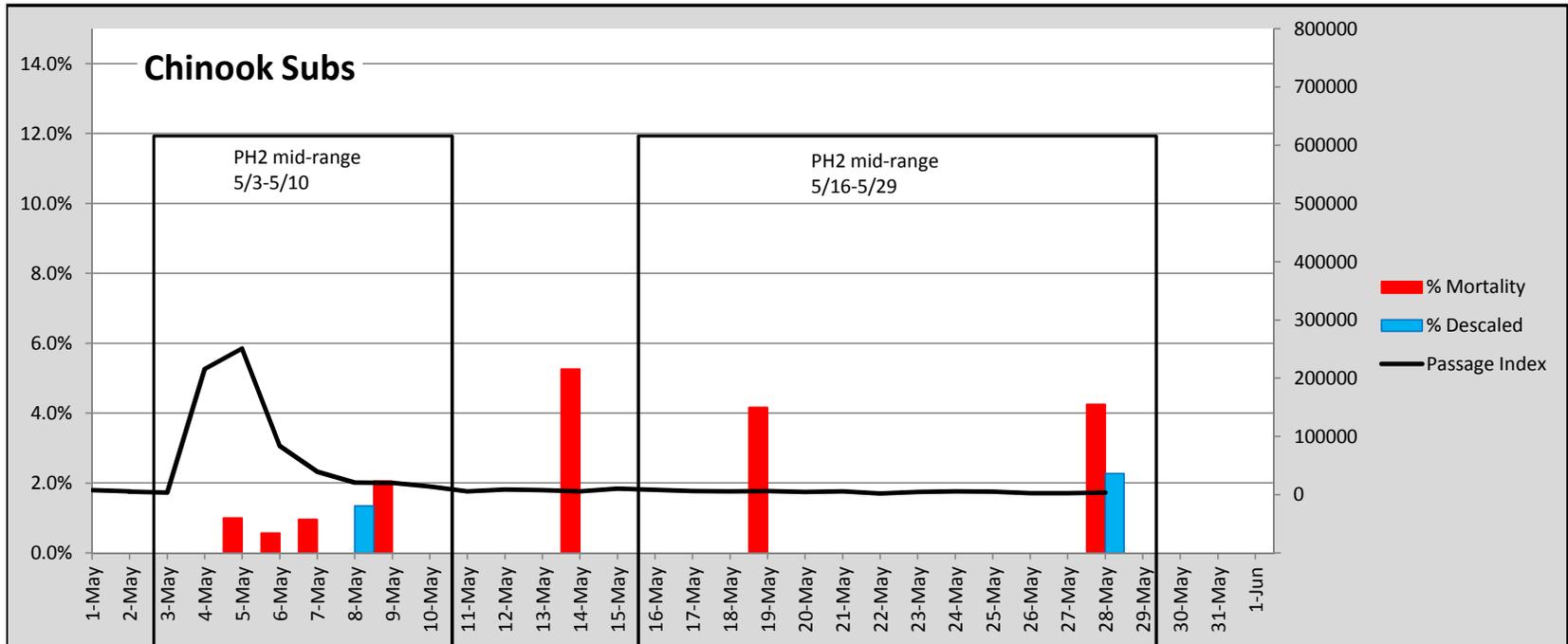
## AGENDA

1. Welcome and Introductions
2. Review May 15 and 22 Meeting Minutes
3. Bonneville Dam Operations - Doug Baus, COE-NWD
  - a. [SOR 2013-03 BON Operations](#)
  - b. [Bonneville Dam Fish Condition Charts, May 1-28](#)
  - c. [Bonneville Dam Fish Condition Data, May 1-28](#)
4. Dworshak Operations - Steve Hall, COE-NWW
  - a. [DWR Operations, May 29](#)

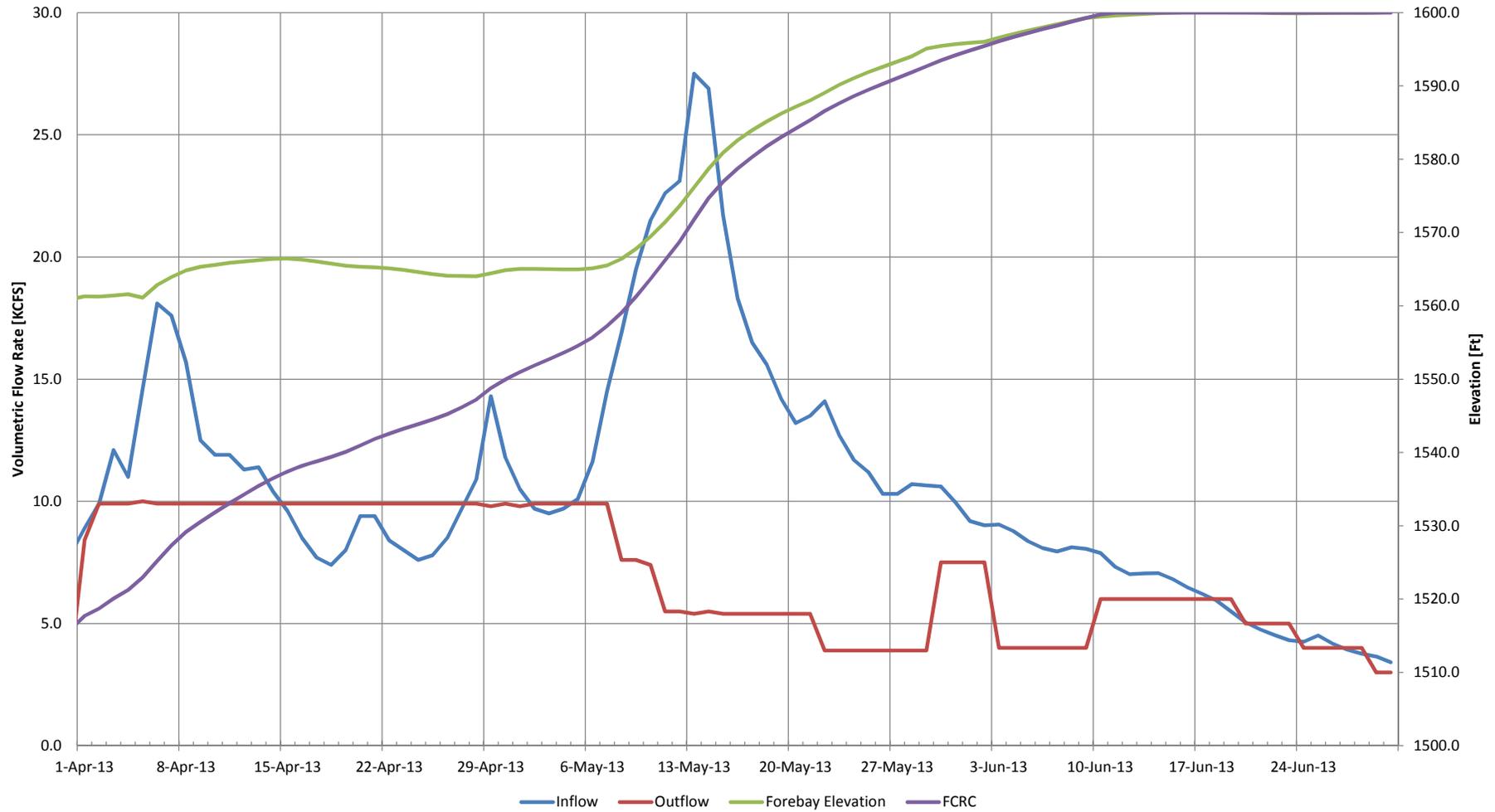
5. Lower Monumental Dam Spring to Summer - *Doug Baus, COE-NWD*
6. Coordination of Hatchery Releases - *Bill Proctor, COE-NWD*
7. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
8. Other
  - a. Set agenda and date for next meeting - **June 5, 2013**
  - b. [[Calendar 2013](#)]

*Questions about the meeting may be referred to:*  
*[Doug Baus](#) at (503) 808-3995*

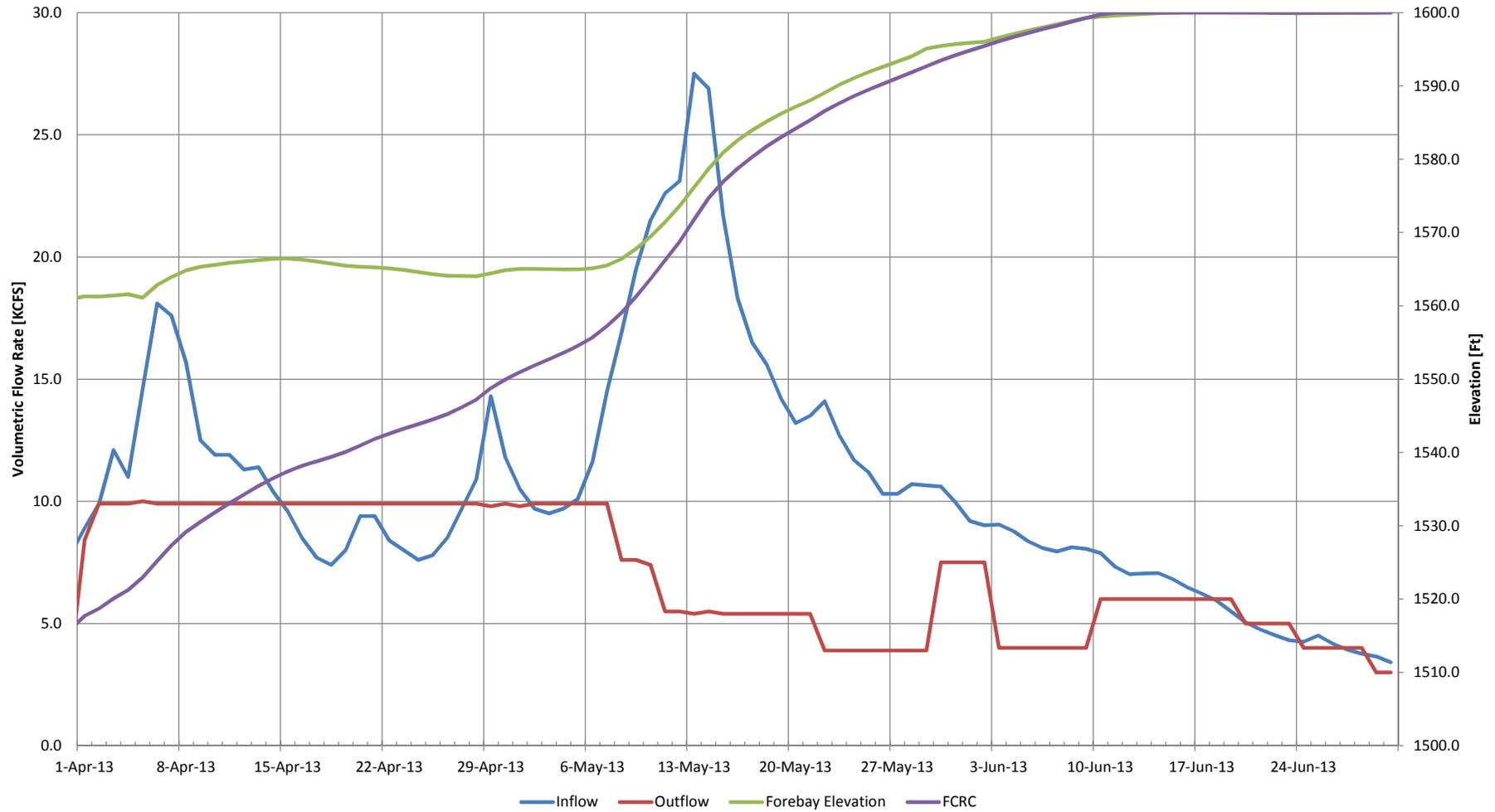




### DWR Regulation to fill by 1 July 2013 using STP Inflows



### DWR Regulation to fill by 1 July 2013 using STP Inflows



RPA No.	Action Description	Implementation Plans, Annual Progress Reporting and Comprehensive RPA Evaluations
<b>Hydropower Strategy 3—Implement Spill and Juvenile Transportation Improvements at Columbia River and Snake River Dams</b>		
29	<p><b>Spill Operations to Improve Juvenile Passage</b>                      The Corps and BPA will provide spill to improve juvenile fish passage while avoiding high TDG supersaturation levels or adult fallback problems. Specific spill levels will be provided for juvenile fish passage at each project, not to exceed established TDG levels (either 110 percent TDG standard, or as modified by State water quality waivers, currently up to 115 percent TDG in the dam forebay and up to 120 percent TDG in the project tailwater, or if spill to these levels would compromise the likelihood of meeting performance standards (see RPA Table, RM&amp;E Strategy 2). The dates and levels for spill may be modified through the implementation planning process and adaptive management decisions. The initial levels and dates for spill operations are identified in Table 2 below. Future Water Management Plans will contain the annual work plans for these operations and spill programs, and will be coordinated through the TMT. The Corps and BPA will continue to evaluate and optimize spill passage survival to meet both the hydrosystem performance standards and the requirements of the Clean Water Act (CWA).</p>	<p><b><u>Implementation Plans</u></b></p> <ul style="list-style-type: none"> <li>The initial spill operation for juveniles is described in the proposed RPA. The spill operation will be updated annually and reported in the FPP.</li> </ul> <p><b><u>Annual Progress Report</u></b></p> <ul style="list-style-type: none"> <li>Spill operations are reported annually.</li> </ul> <p><b><u>2013 and 2016 Comprehensive RPA Evaluation Reports</u></b></p> <ul style="list-style-type: none"> <li>This information is the same as will be reported for each mainstem dam in hydro actions 14-21.</li> </ul>

**Table 2.** Initial Voluntary Spill Operations at Columbia and Snake River Dams<sup>1/</sup>

<b>Project</b>	<b>Spring Operation (Day/Night)</b>	<b>Spring Planning Dates</b>	<b>Summer Operation (Day/Night)</b>	<b>Summer Planning Dates</b>
Bonneville	100 kcfs/100 kcfs	4/10-6/15	85 kcfs/Gas Cap <sup>8/</sup>	6/16-8/31 <sup>4/</sup>
The Dalles	40%/40%	4/10-6/15	40%/40%	6/16-8/31 <sup>4/</sup>
John Day	30/30% or 40/40% <sup>2/</sup>	4/10-6/15	30%/30%	6/16-8/31 <sup>4/</sup>
McNary	40%/40%	4/10-6/15 <sup>7/</sup>	40%/40% vs. 60%/60%	6/16-8/31 <sup>4/</sup>
Ice Harbor	30%/30% vs. 45 kcfs/Gas Cap	4/7-5/30	30%/30% vs. 45 kcfs/Gas Cap	6/16-8/31 <sup>5/</sup>
Lower Monumental	27 kcfs/27 kcfs (Bulk Spill Gas Cap)	4/7-5/6; 5/21-5/30 <sup>3/</sup>	17 kcfs/17 kcfs	6/1 <sup>6/</sup> -8/31 <sup>5/</sup>
Little Goose	30%/30%	4/5-5/6; 5/21-5/30 <sup>3/</sup>	30%/30%	6/1 <sup>6/</sup> -8/31 <sup>5/</sup>
Lower Granite	20 kcfs/20 kcfs	4/3-5/6; 5/21-5/30 <sup>3/</sup>	18 kcfs/18 kcfs	6/1 <sup>6/</sup> -8/31 <sup>5/</sup>

Notes:

<sup>1/</sup> Voluntary spill operations and planning dates may be adjusted (increased or decreased) for research purposes or through the adaptive management process (to better match juvenile outmigration timing, and/or to achieve or maintain performance standards).

<sup>2/</sup> 24-hour spill operations are being tested at John Day following construction of surface flow outlets.

<sup>3/</sup> Maximized transport operations (i.e., elimination of voluntary spill at collector projects) will occur from May 7 to May 20 in years when flows are greater than 65 kcfs on the Snake River.

<sup>4/</sup> Transitions from spring to summer spill has changed from July 1 to June 16 based on updated run timing of subyearling fall Chinook salmon. For further information see the 2007 FCRPS BA, Appendix B.2.1.1, paragraph 3.5.

<sup>5/</sup> Termination of summer spill will occur at the four lower Snake projects when subyearling counts fall below 300 fish per day for 3 consecutive days on a per project basis, but no later than August 31 each year. Termination of spill at Ice Harbor Dam will be two days after Lower Monumental Dam spill ends. If after discontinuing spill at any of the Snake River projects after August 1, the subyearling Chinook collection again exceeds 500 fish per day for two consecutive days, spill will resume at that project. Thereafter, fish collection numbers will be reevaluated to determine if spill should continue, using the criteria above until August 31.

<sup>6/</sup> The actual start of summer spill will be initiated when subyearling Chinook exceed 50% of the collection for a 3 day period for each Snake River project after June 1.

<sup>7/</sup> When seasonally average flows are projected to be less than 125 kcfs, voluntary spill may not be initiated at McNary Dam for spring run fish.

<sup>8/</sup> 85 kcfs daytime spill will be provided from June 16 - July 31 of each year to protect the great majority of the migrating ESA-listed SR fall Chinook salmon, then 75 kcfs during the day from August 1 – August 31 as proposed by the Action Agencies.

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 29, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Meeting Minutes/Notes Review**

TMT reviewed the 5/15 and 5/22 Official Minutes and Facilitator's Notes. A correction to the 5/15 notes was suggested: lamprey 'counts' should be changed to lamprey 'index numbers' in the fish update under Operations Review. With this change, the notes were considered final.

### **Dworshak Operations**

Steve Hall, Walla Walla Corps, shared a model run for Dworshak operations based on the latest STP forecasts and request from the salmon managers to look at a short duration increase in flows concurrent with an increase in the natural hydrograph flows over the next few days. The model showed flows increasing to 7.5 kcfs for four days, then lowering back to 4 kcfs and being managed to refill. The model showed that this operation would not interfere with refill, however Steve cautioned that the water supply forecasts have been changing over the last couple days and inflows might be lower than currently projected. Russ Kiefer, Idaho, provided additional context for the request, stating that this operation would support Snake River migrants and that it was not intended to conflict with refill. Dave Statler, Nez Perce Tribe, said he supported the idea of providing an extra boost to the fish right now, but was concerned that the project would need to go down to minimums at the end of the period in order to meet refill. He preferred a steady flow operation, and asked what that might look like. Steve Hall, Walla Walla, said a flat 4 kcfs could be reasonably provided based on current projections. Other options explored were to increase flows to 6 kcfs rather than 7.5 kcfs, or to increase flows to 7.5 kcfs for three days instead of 4.

**Action/Planned Operation:** Considering today's TMT discussion, the Corps planned to implement an increase in flows to 7.5 kcfs for three days, from 5/30-6/1, then reduce flows as needed to meet a refill target in mid-June. TMT will revisit the operation during their meeting next week on 6/5.

### **Bonneville Operations: SOR 2013-13**

Tom Lorz, CRITFC, shared the SOR signed on by CRITFC, Nez Perce, Oregon, Idaho and Washington, to implement the operation specified in the attached draft FPP Change Form. The change form was developed by an FPOM sub-group comprised of technical representatives from CRITFC, Corps, BPA, NOAA, USFWS, Oregon and Idaho. He said over the last few weeks sockeye descaling rates have been fluctuating and remained a concern. The signatories to the SOR have suggested this is the preferred

operation for addressing descaling and mortality concerns at Bonneville. While the change form itself refers only to spring Chinook, sockeye are considered a good indicator of what is happening with the other species. Dave Wills, USFWS, added that he supported the SOR even though his agency was not currently a signatory. Tom asked the Corps for additional information about the past week's operations, unit availability and debris issues that might be impacting descaling. Doug Baus, Corps, responded that because the change form is still under policy consideration, he was not able to commit to implementing the request in full, but said that the Corps would continue to implement the first three steps: 1) operate PH 2 within 1% of mid-range; 2) operate PH 1 up to 1% upper limit; and 3) operate PH1 up to Best Operating Point. He said project operators have a priority to operate PH2 to stay below the mid-range of 1% as best as possible, and with inflows now at the 300 kcfs range, and given 6 units available, the Corps is able to meet the criteria. He also noted that, per the sub-group's review (and for longer term consideration), if all units at the project are up and running these criteria could be met with inflows in the 320 kcfs range.

Doug showed a graph depicting the fluctuating descaling rates and said there does not seem to be a correlation with fish screen cleaning. He also said debris is not currently a contributing factor. The group discussed descaling rates being between 7-10% and there were mixed comments about how significant a problem descaling is at this range. TMT also discussed the actual operation that had taken place over the past couple of weeks and what exact operations have occurred given that the hourly data indicates much more variations in turbine operations than was depicted in the graphs. They would like assurance that the project operators are doing their best to meet the criteria.

Paul Wagner, NOAA, proposed that the Corps be as aggressive as possible to maintain a steady flow at the project (and avoid operating PH2 outside the mid-range of 1%), recognizing that state water quality standards are a factor. TMT looked at the current TDG exceedances and saw that the project has been very close, often exceeding slightly, the 120% standard – therefore the Corps felt it was doing all that it could within its regulatory responsibilities.

**Planned Operation:** Given today's discussion, the Corps will operate Bonneville using the first three criteria from the request to the extent possible for the next week. TMT will revisit the operation on 6/5.

#### **Lower Monumental Spring to Summer Spill**

Dan Feil, Corps, reported that after the last TMT meeting, the action agencies and NOAA policy representatives met to discuss this issue, and the Corps has determined at this time to use the current BiOp criteria to guide its operations for the performance standard test: when collection at Lower Monumental exceeds 50% of the total Spring Chinook subyearling passage, a switch to summer spill (17 kcfs) will be made. While the current collection rate is around 6%, the shift to summer spill operations could occur any time after June 4, and no later than June 21.

Given this decision, Oregon said they object to any operation that shifts to summer spill prior to June 21, a date that is also indicated in the Fish Operations Plan and 2008 and 2010 supplemental BiOp. He added that Oregon does not see a good rationale for reducing spill during spring migration before this specific date.

**Action/Next Step:** Because a RIOG meeting is already scheduled for tomorrow, 5/30, the Oregon RIOG representative will contact RIOG Chair Bruce Suzumoto and ask for this item to be added to the agenda for discussion and further direction/decision. TMT members will notify their RIOG and Senior Hydro Team representatives that this issue has been elevated and will be discussed at the RIOG tomorrow – and that the Senior Hydro Team may be convened in the near term to do a technical review and further framing for policy consideration by the RIOG. This item will be on the 6/5 TMT agenda.

### **Coordination of Hatchery Releases**

Bill Proctor, Corps, raised a potential issue with hatchery release coordination and asked the salmon managers for their thoughts on whether this is an issue from a biological perspective, and whether a forum existed for coordinating hatchery releases. To the first point, the salmon managers said they would take this issue up at FPAC with an eye toward answering ‘Is there a problem? If so, how should we address it?’ To the second question, Paul Wagner offered to look in to whether a forum already existed and get back to Bill and TMT. The Fish Passage Center provides a summary of scheduled hatchery releases across the basin, so this information is coordinated and readily available.

### **Operations Review**

**Reservoirs** – John Roache, Reclamation, reported on projects. Hungry Horse was at elevation 3544.1 feet, with 9 kcfs outflows and 13 kcfs inflows, which were expected to increase. Grand Coulee was at elevation 1273.6 feet, operating under ‘controlled refill’ with 170-180 kcfs outflows. Lisa Wright, Corps, reported on projects. Libby was at elevation 2424.3 feet, with 29.6 kcfs inflows and 26.8 kcfs outflows. Albeni Falls was at elevation 2059.1 feet, with 68.6 kcfs inflows and 60.3 kcfs outflows. Dworshak was at elevation 1594.1 feet, with 10.7 kcfs inflows and 3.9 kcfs outflows. Lower Granite average inflows were 64.3 kcfs; McNary average inflows were 287.6 kcfs; and Bonneville average inflows were 303.3 kcfs.

Doug Baus, Corps, said the sturgeon pulse operation is underway with the second pulse; Libby will maintain current powerhouse discharges until further discussion and determination by the Sturgeon Review Team. He also shared that the proposed spill priority list for the performance standard test period shared last week had gone in to affect yesterday, 5/28. Erick Van Dyke, Oregon, raised a question about the placement of Lower Monumental on the list, but did not request a change at this time.

**Fish** – Paul Wagner, NOAA, reported on fish passage. Adult spring Chinook at Bonneville counts totaled 88,849 to date with about 1,000/day passage. Counts were lower than the 10-year average. Jacks were doing really well. Juvenile yearling Chinook counts were trending down; at Lower Granite counts were less than 1,000/day and less than 10,000/day at Bonneville. Subyearling were on the uptick but not as quickly as had been expected, with counts ranging 3,000-5,000/day at Lower Granite. Steelhead passage was also trending down; about 5,000/day at Lower Granite. Sockeye numbers have continued to decline since the peak passage two weeks ago. The lamprey index showed a similar trend, with no more counted on the Snake and past the peak at McNary.

Water quality – Laura Hamilton, Corps, reported on two gauge malfunctions in May, at The Dalles forebay and Cascade Island. Both had since been fixed. She also showed April TDG exceedances and pointed out that all had been due to best professional judgment (not involuntary spill).

Power system – Nothing to report.

**Next Meeting, June 5 face to face**

Agenda items include:

- Dworshak Operations
- Bonneville Operations
- Lower Monumental Spill/Performance Standard Testing

## Columbia River Regional Forum

### TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

**May 29, 2013**

Notes: Pat Vivian

#### ***1. Introduction***

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of Montana, BPA, the COE, Oregon, NOAA, Washington, Idaho, USFWS, the Nez Perce Tribe, BOR, CRITFC/Umatilla, Idaho and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

#### ***2. Review of May 15 and 22 Meeting Minutes***

Paul Wagner, NOAA, said the lamprey count at Lower Granite was really an index count in the May 15 facilitator's notes. With this change, the notes and minutes for these meetings will be considered final unless future concerns are raised.

#### ***3. Dworshak Operations***

Steve Hall, COE Walla Walla, showed TMT a plot linked to today's agenda that depicts a request from Idaho to increase Dworshak outflows to 7.5 kcfs from May 30 for the next 4 days, then reduce flows to 4 kcfs.

Over the past few days the inflow forecast for Dworshak has changed significantly and rapidly, Hall said. A projection of 12-13 kcfs inflows through the end of the month has changed to about 10 kcfs by May 31, followed by slow recession. The STP forecast released yesterday shows a more reasonable but probably wetter than actual scenario. Inclement weather prevented the COE from flying the basin to determine the percent of snowpack remaining, but the plan is to try again May 31. At this point the COE is concerned about refilling the reservoir, as there are strong indications of a long, hot summer.

Russ Kiefer, Idaho, explained the biological rationale behind the request. If water is available, it would boost survival to provide an additional bump in flows to help move the last of the spring migrants – yearling chinook, steelhead, sockeye and coho – through the system to the ocean. While 4 days has been suggested, Idaho is not set on the number of days of additional flows being requested. Obviously the Salmon Managers don't want to jeopardize refill, but if water is available, this would be a good use of it.

Wagner said the forecast dropped today from flows in the low 80s at Lower Granite to 72 kcfs today. The Idaho proposal would add approximately 3.5 kcfs to that. Hall agreed the forecast will be less than anticipated. The recession in inflows could be steeper than STP projections show. Providing this extra water now could mean having

to go to minimums to refill, Hall said. There are indications that the basin has only 10% remaining snow covered area. This period of flows isn't augmentation but shaping of available water, which means risking lower flows after this pulse, Tony Norris, BPA, added.

There was general acknowledgement of this, but the Salmon Managers said providing additional flows could be of significant benefit to outmigrants at this time. When **Idaho** modified its recommendation to 3 days of 7.5 kcfs instead of 4 days, **Washington, NOAA, Oregon** and **CRITFC** supported the recommendation. **CRITFC** said it would be possible to be even more aggressive and not risk refill. The **Nez Perce** supported the 7.5 kcfs bump but requested 2 days instead of 3 days due to concerns about providing stable river management and not having to go to minimums to refill the reservoir.

Hall asked the Salmon Managers to reaffirm their acceptance of the risk this operation poses to refill. The risk is small but present. With that understood, the COE agreed to provide 3 days of an additional 7.5 kcfs flows beginning May 30. TMT will revisit Dworshak operations at its next meeting.

#### ***4. Bonneville Dam Operations – SOR 2013-03***

This SOR asks the Action Agencies to respond to high rates of descaling at Bonneville PH2 by implementing the draft FPP change form, as discussed at last week's TMT. As lead signatory to the SOR, Tom Lorz, CRITFC/Umatilla, said sockeye descaling rates at Bonneville PH2 have varied widely in recent days. It has been difficult to determine whether the available units have been operating in the mid-range of 1% or not. It is also difficult to determine why descaling rates are so variable from one day to the next.

The FPOM task force that prepared the change form included representation by the COE, BPA, NOAA, USFWS, Oregon and Idaho, Lorz explained. A distinction was made between this SOR, which asks for a short-term operation only as adaptive management for sockeye descaling, and the FPP change form process, which requires the Action Agencies to approve the proposal at a policy level. Ultimately implementation of this change form will require Action Agency policy review that has not been completed at this time.

Lorz emphasized that the signatories agreed the procedure called for in the change form is the appropriate response to minimize sockeye descaling at Bonneville PH2. **Idaho, the Nez Perce Tribe, USFWS, Washington and Oregon** expressed their support today for the short term operation SOR 2013-03 requests.

Baus explained that Bonneville inflows, which have declined to the range of 300 kcfs, are allowing an operation that conforms to the first three steps outlined under section 5.3.1 on page 3 of the SOR. Therefore, the COE is in a position to implement the spirit of the SOR at this time. However, step 4, which establishes juvenile-to-adult

triggers for additional flows, has not yet been fully vetted from a policy standpoint and therefore cannot be implemented.

Discussion turned to variable descaling rates, which ranged from 4-16% from May 16-28. Baus said the COE is looking for a clear, consistent pattern of cause and effect. At times when screen conditions would seem to be at their worst, just before cleaning, sockeye descaling rates have been low. And cleaning the screens does not appear to reduce descaling. Generally, debris has been minimal this spring and the river is running relatively clean. Even when units operate in the mid-range, descaling rates have been high, Norris said.

Dave Statler, Nez Perce, said it's important to keep trying to determine the cause of high descaling rates at PH2. Lorz asked whether operations over the past week have been strictly within the mid-range of 1%. Baus said the BOP offset at PH1 has been spread evenly across all 6 units running at PH2, and the COE made it a priority to decrease the PH2 units to the mid range as flows dropped. Summarizing hourly data from 6 am today, the 6 available units in PH2 passed about 15.5 kcfs per unit, which means they are operating in the mid-range of 1%.

Wagner proposed a minimum spill of 100 kcfs over the next week to keep these units operating in the mid range, even if spill does result in slight exceedances of the TDG limit. When the numbers are close, wind can make the difference between 120% and 121% TDG in the tailrace. The Salmon Managers would like to see a steady operation over the next 3-4 days. Bill Proctor, COE, said all efforts will be made to push the TDG limit within current Oregon and Washington state standards if policy approval is granted.

Dan Feil, COE, wondered if any of the descaling could be occurring upstream, but Margaret Filardo, FPC, and Charles Morrill, Washington, said only freshly injured fish are counted as descaled. Norris asked what percentage of fish use the bypass. Lisa Wright, COE, said it's typically around 4% of fish that pass the project. The percentages of fish descaled apply only to fish using the bypass, which results in small sample sizes, e.g. 14% of 97 fish were descaled. Operating the units in the mid-range would only impact fish using the PH2 gatewells and subsequently the PH2 bypass system.

For the coming week, the COE will continue to operate the project as it has over the last week, keeping in mind NOAA's request to spill as aggressively as possible. TMT will revisit the Bonneville operation at its next meeting June 5.

### ***5. Lower Monumental Dam Spring to Summer Spill***

The FOP gives a hard start date of approximately June 21 for beginning summer spill operations at Lower Monumental, Feil said. Additional BiOp language indicates the Action Agencies can make the switch earlier based on run timing and availability of fish for tagging. The current BiOp criteria include a stipulation that, after June 1, summer

spill operation will begin at Snake projects when collection of subyearling chinook exceeds 50% of the total collected.

NOAA's alternative proposal last week to use the 95% passage date as a trigger for summer spill at Lower Monumental was not well supported, Feil recalled, so the COE intends to follow BiOp criteria regarding collection counts. With a goal of conducting a successful performance test at Lower Monumental over the middle 80% of the run, the COE will begin summer spill of 17 kcfs at Lower Monumental when subyearlings amount to more than 50% of the fish collected for 3 consecutive days, as early as June 4.

Derek Fryer, COE Walla Walla, reported that the first group of tagged fish will not be released today as planned because not enough fish were collected. Staff will try again in a few days.

**Oregon** will object and elevate the issue to RIOG if the COE begins 17 kcfs summer spill at Lower Monumental earlier than June 21, the start date specified in the FOP, Erick Van Dyke said. Oregon has never agreed to language carried forward from the 2005 BiOp regarding the start of summer spill being based on subyearling Chinook run-timing. Furthermore, Oregon has data indicating the current STP projection would need to increase by 7 kcfs to fall outside the bounds of the performance standard test operation this summer.

Because RIOG meets tomorrow, preparations will be rushed to present this issue for a policy review. Oregon's RIOG representative, Bill Bradbury, will add this issue to the RIOG meeting agenda. Van Dyke asked whether the COE has any new information available since last week on which to base its current position; Fiel said no. TMT will revisit this issue at its next meeting June 5.

## ***6. Coordination of Hatchery Releases***

Often multiple hatcheries release fish into the river at the same time, Proctor said. Is there a biological reason for releasing so many fish at once, or would coordinating these releases improve passage at dams and fishways? Kiefer agreed with Proctor this is a question worth addressing, one probably best pursued at FPAC. Overloading the raceways is a problem when transporting, but there is also biological benefit in swamping predators with large numbers of fish.

Charles Morrill, Washington, said hatcheries follow best management practices to achieve optimal survival rates. A range of variables goes into scheduling the release dates of fish, including when the fish are physically ready to migrate. Also, on rare occasions projects have had to go into bypass mode because there were too many fish to collect. Morrill agreed this question is worth investigating, particularly from the perspective of helping smolts ride a wave or freshet through the system. Wagner said he will find out whether NOAA does any coordination of hatchery releases and follow up

with TMT. There was general agreement this long-term question can be dealt with after TMT coordinates the more pressing operational issues at hand.

## **7. Operations Review**

**a. Reservoirs.** Hungry Horse is at elevation 3544.1 feet, with inflows of 13 kcfs and releases of 9 kcfs. The project is slowly filling and inflows are expected to rise. Grand Coulee is at elevation 1273.6 feet, with average discharges of 170-180 kcfs and no spill. The project is on refill operations, with a flood risk elevation limit of 1279.4 feet through the end of May.

Libby is at elevation 2424.3 feet, with inflows of 29.6 kcfs and releases of 26.8 kcfs. Albeni Falls is at elevation 2059.1 feet, with inflows of 68.6 kcfs and releases of 60.3 kcfs. Dworshak is at elevation 1594.1 feet, with inflows of 10.7 kcfs and releases of 3.9 kcfs.

McNary daily average inflows are 287.6 kcfs. Bonneville daily average inflows are 303.3 kcfs. Lower Granite average inflows are 64.3 kcfs.

Baus gave an update on the Libby sturgeon pulse and spill priority list. The second sturgeon pulse is currently underway at Libby. The change from 18 kcfs to full powerhouse occurred on May 24. The COE and USFWS will meet later this week to discuss how long to extend the pulse, possibly for a few days beyond this week. Regarding the spill priority list, as discussed at the last TMT meeting, the performance standards testing projects (Little Goose and Lower Monumental) were moved as of May 28 to the bottom of the spill priority list to minimize involuntary spill during testing.

**b. Fish. Adults:** Daily passage counts of spring chinook at Bonneville are staying consistent but on the low side of expectations, with 800 fish arriving at Bonneville yesterday, Wagner reported. All project counts for spring chinook are below the 10 year average, not just Bonneville. Spring chinook jacks continue to return in large numbers, which bodes well for next year.

Juveniles: Yearling chinook passage is decreasing at all projects, with less than 1,000 fish passing Lower Granite and Lower Monumental and, just a little over 1,000 passing Little Goose. Passage counts on the mid Columbia have been dropping off quickly and the yearling chinook run is on the decline. Subyearling chinook passage is increasing but not as quickly as expected. Not all of the 2.8 million fish that were released are showing up simultaneously. Little Goose and Lower Monumental are not seeing many fish yet, while passage at John Day, Bonneville, The Dalles and McNary is picking up slowly.

Steelhead passage is following the same pattern as yearling chinook, with the peak occurring weeks ago. Passage has declined to index counts of 5,000 fish each at Lower Granite and Little Goose. Sockeye passage on the Snake is well on its way

down. Lamprey numbers have been fluctuating, with peak passage of 14,000 at John Day Dam about a week ago.

**c. Water Quality.** Two gages malfunctioned recently, Laura Hamilton, COE, reported. One was in The Dalles forebay, which had no data for May 19. The Cascade Island gage also had problems and has been fixed.

Attached to today's agenda is a chart showing TDG exceedance types in April. Most of these were 3's, which means the spill cap was set using best professional judgment but turned out to be too high. Hamilton will prepare a similar chart showing TDG exceedances in May, which will show a lot of involuntary spill due to high flows.

**d. Power System.** There was nothing to report today.

## **6. Next TMT Meeting**

There will be a TMT meeting in person on June 5. Dworshak, Bonneville and Lower Monumental operations will be on that agenda.

<b>Name</b>	<b>Affiliation</b>
Jim Litchfield	Montana
Tony Norris	BPA
Lisa Wright	COE
Erick Van Dyke	Oregon
Paul Wagner	NOAA
Doug Baus	COE
Bill Proctor	COE
Dan Feil	COE
Karl Kanbergs	COE
Laura Hamilton	COE
Agnes Lut	BPA
Kim Johnson	COE

### *Phone:*

Charles Morrill	Washington
Russ Kiefer	Idaho
David Wills	USFWS
Dave Statler	Nez Perce
John Roache	BOR
Heather Dohan	Puget
Ruth Burris	PGE
Steve Hall	COE
Greg Lawson	Thompson Reutters
Russ George	WMC
Bruce McKay	hydro consultant
Richelle Beck	Grant PUD

Margaret Filardo  
Peter Richardson  
Barry Espenson  
Mike Shapley  
Bill Rudolph  
Scott Bettin  
Tom Lorz  
Derek Fryer  
Shane Scott

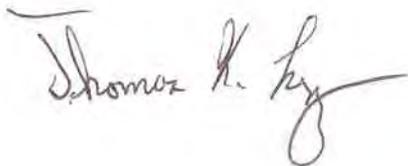
FPC  
Jenscape  
CBB  
Snohomish PUD  
NW Fish Letter  
BPA  
CRITFC/Umatilla  
COE Walla Walla  
PPC

## SYSTEM OPERATIONAL REQUEST: #2013-3

*The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Idaho Department of Fish and Game, the Nez Perce Tribes, and the Columbia River Inter-Tribal Fish Commission.*

**TO:**

<b>Gen. Anthony Funkhouser</b>	<b>COE-NWD</b>
<b>Col. John Eisenhower</b>	<b>COE-NWD</b>
<b>Lt. Col. Andrew Kelly</b>	<b>COE-Walla Walla</b>
<b>James D. Barton</b>	<b>COE-Water Management</b>
<b>Doug Baus</b>	<b>COE-RCC</b>
<b>David Poganis</b>	<b>COE-PDD</b>
<b>Karl Kanbergs</b>	<b>COE-NWD-NP-WM-RCC</b>
<b>Lorri Lee</b>	<b>USBR-Boise Regional Director</b>
<b>Bill Drummond</b>	<b>BPA-Administrator</b>
<b>Tony Norris</b>	<b>BPA-PGPO-5</b>
<b>Scott Bettin</b>	<b>BPA- KEWR-4</b>
<b>Steve Oliver</b>	<b>BPA-PG-5</b>
<b>Lori Bodi</b>	<b>BPA-KE-4</b>



**FROM:** Tom Lorz, Vice-Chair FPAC

**DATE:** May 28, 2013

**SUBJECT:** Bonneville Operations

**OBJECTIVE:** Due to the high rate of descaling of juvenile sockeye salmon passing through the Bonneville Dam juvenile bypass facility, implement the Fish Passage Plan Request Change Form written and recommended by the FPOM sub-group concerning Bonneville turbine operations.

**SPECIFICATIONS:** Immediately Implement Fish Passage Plan Change Request Form:14BON001 Table BON-16 Add Mid-Range.

**JUSTIFICATION:**

The Fish Passage Operations and Maintenance (FPOM) Committee directed a sub-group to investigate and recommend changes concerning turbine operations at Bonneville Dam with regard to juvenile and adult migrant passage and survival. Fish Passage Change Plan Form 14BON001 Table BON-16 Add Mid-Range is the recommendation made by the FPOM sub-group to FPOM. The

sub-group justification is in the attached memo *Bonneville Dam Turbine Unit Operations and Fish Condition* dated May 3, 2013. To date, this change form has been agreed upon by all fisheries agencies, but is waiting for approval from the Action Agencies. This change form and FPOM sub-group support memo are attached and can be found at the FPOM website under the May meeting minutes at: [http://www.nwd-wc.usace.army.mil/tmt/documents/FPOM/2010/2013\\_FPOM\\_MEET/2013\\_MAY/](http://www.nwd-wc.usace.army.mil/tmt/documents/FPOM/2010/2013_FPOM_MEET/2013_MAY/).

The following table summarizes sockeye descaling at Bonneville Dam since May 16, 2013.

<b>Species</b>	<b>Date</b>	<b>Number Examined</b>	<b>Percent Descaled</b>
SO	5/16/2013	35	8.6%
	5/17/2013	70	2.9%
	5/18/2013	102	15.7%
	5/19/2013	171	15.8%
	5/20/2013	97	14.4%
	5/21/2013	106	7.5%
	5/22/2013	226	10.2%
	5/23/2013	56	3.6%
	5/24/2013	147	4.1%
	5/25/2013	104	14.4%
	5/26/2013	80	5.0%
	5/27/2013	71	8.5%
	5/28/2013	45	4.4%

With continued elevated sockeye descaling recorded at Bonneville Dam, it is the recommendation of the members signed on to this SOR that the action agencies immediately implement the change form written and recommended by an FPOM sub-group to FPOM. Attached is a memorandum written on June 7, 2012 by the Fish passage Center concerning Juvenile Fish Mortality Estimates for Bonneville Second Powerhouse Bypass.

## ATTACHMENTS

### FPP Change Request Form

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**Change Request Number:** 14BON001 Table BON-16 Add Mid-Range

**Date Submitted:** 3/29/2013

**Project:** BON

**Requester Name, Agency:** FPOM BON Ops Task Group

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#### **Location of Change - FPP Project and Section:**

BON sections 5.2 and 5.3 (Turbine Unit Operations and Maintenance), and Table BON-16 (PH2 turbine 1% range)

#### **Proposed Changes:**

### **5. TURBINE UNIT OPERATION AND MAINTENANCE**

**5.1.** Powerhouse priority is detailed in **Table BON-14**. When splitting flows, as directed in section **2.1.2**, the top two available priority units for PH1 will be operated first followed by normal unit priority at PH2. If there is a need for more units, and all available units at PH2 are in operation, proceed with the normal unit priority for PH1.

**5.2. November 1 through March 31.** All turbine units will operate *as a soft constraint* within  $\pm 1\%$  of peak efficiency (within upper and lower limits of the 1% range) as shown in **Tables BON-15** (PH1) and **BON-16** (PH2) for project heads of 35-70 feet. See **BPA Load Shaping Guidelines (Appendix C)** for further information on turbine operations within and outside of the 1% range.

**5.3. April 1 through October 31.** Except as defined below in section **5.3.1**, all turbine units will operate *as a hard constraint* within  $\pm 1\%$  of peak efficiency (within upper and lower limits of the 1% range) as shown in **Tables BON-15** (PH1) and **BON-16** (PH2).

**5.3.1. April 10 through August 31.** During the spring and summer spill seasons when the project is spilling in accordance with the Fish Operations Plan (FOP, see **Appendix E**), turbine units will operate in the following priority order to pass increasing flow:

1. Operate PH2 units within the 1% mid-range (**Table BON-16**);
2. Then, operate PH1 units up to the 1% upper limit (**Table BON-15**);
3. Then, operate PH1 units up to Best Operating Point (BOP; **Table BON-15**);
4. **From April 10 through June 20 (spring spill season)**, additional flow above what can be passed in steps 1-3 will be passed in one of the two following ways, as directed by Project Fisheries based on monitoring of juvenile and adult spring Chinook passage and collection data:

- a. If the adult trigger is met (adult counts exceed juvenile collection counts for two consecutive days), then operate PH2 up to the 1% upper limit in the following unit priority order: 18, 17, 16, 15, 14, 13, 12, 11 until adult counts drop below juvenile counts for 3 consecutive days.
  - b. If the adult trigger is *not* met (adult counts are less than juvenile collection counts for two consecutive days), then increase spill to pass the additional flow.
5. **From June 21 through August 31 (summer spill season)**, additional flow above what can be passed in steps 1-3 will be passed by operating PH2 up to the 1% upper limit.

5.4. The project turbine unit maintenance schedules will be reviewed by Project and Operations Division biologists for fish impacts. If possible, maintenance of priority units will be scheduled for winter maintenance periods, or when there are low numbers of fish passing the project.

#### **Existing Language For Section 5:**

### **5. TURBINE UNIT OPERATION AND MAINTENANCE**

5.1. Powerhouse priority is detailed in **Table BON-14**. When splitting flows, as directed in section 2.1.2, the top two available priority units for PH1 will be operated first followed by normal unit priority at PH2. If there is a need for more units, and all available units at PH2 are in operation, proceed with the normal unit priority for PH1.

5.2. Turbine units at PH1 will operate within 1% of best efficiency and within cavitation limits at various head ranges as shown in **Table BON-15**.

5.2.1. Turbine units at PH2 will operate at the mid to lower 1% range (unless total dissolved gas waivers are exceeded in the tailrace) of best efficiency and within cavitation limits at various head ranges as shown in **Table BON-16**.

5.3. Turbines will be operated within  $\pm 1\%$  of best turbine efficiency from April 1 through October 31 (as specified in the BPA load shaping guidelines), except as outlined in **Appendix C**.

5.4. The project turbine unit maintenance schedules will be reviewed by Project and Operations Division biologists for fish impacts. If possible, maintenance of priority units will be scheduled for winter maintenance periods, or when there are low numbers of fish passing the project.

#### **Justification for Change:**

FPOM requested adding PH2 1% mid-range columns since PH2 may be limited to mid-range operation. See Memo to FPOM from Bonneville Turbine task group for justification.

Comments from others: See FPC memo

Record of Final Action:

**Table BON-16. Bonneville Dam Powerhouse Two Turbine Units 11-18 (with and without STSs) Output (MW) and Discharge (cfs) at the Upper, Mid-Range and Lower Limits of the 1% of Peak Efficiency Operating Range.**

Head (feet)	Powerhouse Two (units 11-18)											
	1% Limits With STS						1% Limits Without STS					
	Lower Limit		Mid-Range 13K – 15K		Upper Limit		Lower Limit		Mid-Range		Upper Limit	
	(MW )	(cfs)	(MW )	(MW )	(MW )	(cfs)	(MW )	(cfs)	(MW )	(cfs)	(MW )	(cfs)
35	27.6	11,259	31.9	36.8	44.3	18,068	28.2	11,444	36.7	14,861	45.1	18,277
36	28.5	11,27	32.9	37.9	45.8	18,09	29.2	11,45	37.9	14,88	46.6	18,30
37	29.4	11,27	33.9	39.1	47.3	18,12	30.1	11,46	39.1	14,89	48.1	18,33
38	30.3	11,28	34.9	40.3	48.8	18,13	31.0	11,47	40.4	14,91	49.7	18,35
39	31.3	11,28	36.0	41.6	50.3	18,15	32.0	11,47	41.6	14,91	51.2	18,36
40	32.2	11,28	37.1	42.8	51.8	18,16	32.9	11,47	42.8	14,92	52.7	18,37
41	33.0	11,25	38.1	44.0	53.3	18,19	33.7	11,44	44.0	14,92	54.3	18,40
42	33.8	11,23	39.1	45.2	54.9	18,22	34.6	11,41	45.2	14,92	55.8	18,44
43	34.6	11,20	40.2	46.3	56.4	18,25	35.4	11,38	46.4	14,92	57.4	18,46
44	35.4	11,17	41.2	47.5	57.9	18,27	36.2	11,35	47.6	14,92	58.9	18,49
45	36.2	11,14	42.2	48.7	59.4	18,29	37.0	11,32	48.8	14,92	60.5	18,51
46	37.0	11,13	43.2	49.8	61.0	18,36	37.9	11,32	50.0	14,95	62.1	18,58
47	37.8	11,13	44.2	51.0	61.9	18,20	38.7	11,31	50.9	14,86	63.0	18,41
48	38.7	11,12	45.2	52.1	62.7	18,04	39.6	11,31	51.7	14,78	63.8	18,25
49	39.5	11,12	46.2	53.3	63.5	17,88	40.4	11,30	52.6	14,70	64.7	18,10
50	40.3	11,11	47.2	54.4	67.5	18,59	41.3	11,30	55.0	15,06	68.7	18,81
51	41.3	11,15	48.1	55.5	69.8	18,85	42.2	11,33	56.7	15,20	71.1	19,07
52	42.3	11,18	49.1	56.7	72.1	19,09	43.2	11,37	58.3	15,34	73.4	19,31
53	43.2	11,21	50.1	57.8	74.5	19,32	44.2	11,40	60.0	15,47	75.8	19,55
54	44.2	11,24	51.0	58.8	76.5	19,53	45.2	11,43	60.9	15,43	76.5	19,43
55	45.2	11,27	52.1	60.1	76.5	19,11	46.2	11,46	61.4	15,22	76.5	18,97
56	46.4	11,34	53.2	61.3	76.5	18,71	47.4	11,53	62.0	15,05	76.5	18,58
57	47.6	11,40	54.2	62.6	76.5	18,33	48.6	11,59	62.6	14,89	76.5	18,20
58	48.8	11,46	55.4	63.9	76.5	17,96	49.9	11,65	63.2	14,74	76.5	17,83
59	50.0	11,51	56.5	65.1	76.5	17,61	51.1	11,70	63.8	14,59	76.5	17,48
60	51.2	11,56	57.6	66.4	76.5	17,26	52.3	11,76	64.4	14,45	76.5	17,14
61	51.8	11,53	58.5	67.5	76.5	16,97	53.0	11,72	64.8	14,29	76.5	16,85
62	52.5	11,49	59.5	68.6	76.5	16,69	53.7	11,69	65.1	14,13	76.5	16,58
63	53.1	11,46	60.4	69.7	76.5	16,42	54.3	11,65	65.4	13,98	76.5	16,31
64	53.7	11,43	61.3	70.7	76.5	16,16	55.0	11,62	65.8	13,84	76.5	16,05

<b>65</b>	54.4	11,40	<b>62.3</b>	<b>71.8</b>	76.5	15,91	55.6	11,59	66.1	13,70	76.5	15,80
<b>66</b>	55.4	11,44	<b>63.2</b>	<b>72.9</b>	76.5	15,67	56.7	11,63	66.6	13,60	76.5	15,57
<b>67</b>	56.5	11,49	<b>64.2</b>	<b>74.0</b>	76.5	15,43	57.8	11,68	67.2	13,51	76.5	15,34
<b>68</b>	57.5	11,53	<b>65.1</b>	<b>75.1</b>	76.5	15,21	58.9	11,72	67.7	13,42	76.5	15,11
<b>69</b>	58.6	11,57	<b>66.1</b>	<b>76.3</b>	76.5	14,99	59.9	11,76	68.2	13,33	76.5	14,90
<b>70</b>	59.6	11,61 0	<b>67.0</b>	<b>77.3</b>	76.5	14,77 5	61.0	11,80 3	68.8	13,24 8	76.5	14,69 3

\* Table based on data provided by HDC, January 2001 (Table BON-16 revised 2006).

**May 3, 2013**

**MEMORANDUM TO:** The Fish Passage Operations and Maintenance Committee

**FROM:** Members of the FPOM Bonneville Operations Task Group

**SUBJECT:** Bonneville Dam Turbine Unit Operations and Fish Condition

A program designed to improve fish guidance efficiency through development of juvenile bypass systems at Columbia River hydroelectric projects has been ongoing since the 1970's. During the 1980's and 1990's new turbine bypass technologies and equipment were included at Bonneville Dam's Second Powerhouse (PH2), however fish guidance efficiency (FGE) studies continued to indicate guidance levels that fell short of expectations. In 1999, the region focused on improving guidance and survival. Prototype modifications began in 2001 and full powerhouse implementation was completed in 2008. Modifications included an increase in Vertical Barrier Screen (VBS) flow area, installation of turning vanes on the Submersible Traveling Screens (STS) to increase flow into the gatewell, addition of a gap closure device to eliminate fish loss at the VBS, and installation of interchangeable profile bar screen VBS to allow for screen removal and cleaning without turbine outages or intrusive gatewell dipping. The improvements associated with this program dramatically increased the flow into the gatewell slots which resulted in significant increases in fish guidance efficiency. Unfortunately, smolt monitoring in 2007 indicated that there may have been some unintended smolt injury consequences from the improved guidance system. Studies conducted in 2008 and 2009 confirmed that when these units were operated in the mid to upper 1% efficiency operating band, descaling and mortality was elevated in Spring Creek hatchery and run-of-river outmigrant spring and fall Chinook salmon. These results and subsequent smolt monitoring program observations of elevated smolt descaling and mortality have led to an ongoing Corps program to address the problem through design alternatives. In the meantime, operations of the units at PH2 have been modified periodically to reduce the incidence of descaling and mortality.

The following discussion examines each of the issues associated with this gatewell passage problem including an examination of some of the interim and long-term solutions. These topics include:

1. Second powerhouse gatewell fish condition test results from 2008 and 2009
2. Past (<2007) and recent (2010 – 2012) Smolt Monitoring Program data and observations
3. Second powerhouse gatewell debris/turbine loading/fish condition relationships
4. Second powerhouse turbine unit passage and survival considerations
5. NERC generation flexibility requirements and AGC programming schedule
6. First powerhouse Best Operating Point MGR unit operation
7. Adult passage concerns – spillway approach and Bradford Is. fallback
8. Total dissolved gas concerns
9. Generation limitations due to 115kv and 230kv line limitations
10. Gatewell Improvement Program alternatives and schedule

**1) Gatewell Fish Condition Studies:** In 2008 and 2009 the National Marine Fisheries Service, under contract to the Corps of Engineers, conducted gatewell survival, passage and injury studies at PH2 (Gilbreath et al. 2012). The work in 2008 was limited to Spring Creek hatchery fish mainly because the Submersible Traveling Screens (STS's) were pulled out in mid-May due to severe debris issues. The 2009 work included Spring Creek hatchery fish and both spring and summer run-of-river Chinook salmon.

The 2008 study used 31,988 juvenile Chinook salmon from the Spring Creek hatchery, 780 run-of-river yearling Chinook and 2,123 run-of-river subyearling Chinook salmon. The fish were fin clipped or PIT tagged and released into the gatewells at lower, middle and upper 1% peak efficiency turbine unit operating range. The test fish were subsequently captured in the smolt monitoring facility and evaluated for condition. Releases occurred from early March through early May. Tests of run-of-river yearling Chinook were not completed due to the regional decision to pull all submersible traveling screens beginning about May 21. Run-of-river subyearling Chinook tests were completed from July 1- 17.

The 2009 study used 13,497 Spring Creek subyearling Chinook, 6,771 yearling run-of-river Chinook and 10,137 subyearling run of river Chinook. The Spring Creek and yearling fish were released in the spring while the subyearlings were released in the summer. All fish were PIT tagged and recovered by the sort-by-code system in smolt monitoring facility where they were examined for condition. Tests with Spring Creek fish assessed fish condition at unit loadings of lower-middle 1% operation (13.5 kcfs) and middle 1% operation (14.7 kcfs). Tests using run-of-river fish assessed effects of running the units the middle 1% and the upper 1% (17.8 kcfs) unit operation. Spring Creek subyearling Chinook completed March 26 - May 8. Run-of-river yearling Chinook completed May 12 – June 5. Run-of-river subyearling Chinook completed June 16 – July 12.

Both study years showed that fish condition deteriorated with increasing unit flow. In 2008, high spring debris loads confounded the run-of-river spring migrant tests; however the Spring Creek Hatchery release tests were conducted in four series. From the report: “Results from Test Series 1-3 confirmed that lower-1% operation was less detrimental than upper-1% operation for Spring Creek Hatchery subyearling Chinook. After consulting with U.S. Army Corps of Engineers personnel, we changed the design for Test Series 4 to compare middle- vs. upper-1% operation: further evaluation of passage performance at lower-1% operation was not deemed necessary. Results from Test Series 4 showed that fish released to the intake had mortality rates of 2.7% for middle-1% and 18.1% for upper-1% operation. These differences were significant. The summer run-of-river subyearling Chinook tests for middle vs. upper 1% operations indicated increased descaling and mortality for the higher operation (descaling 0.4% vs. 0.7% and mortality 0.6% vs. 2.6% for mid vs. upper % operations, respectively), however the results were not significant.

In 2009, mortality of Spring Creek subyearlings was less at lower-middle than at middle 1% operation (means were 3.3% and 5.4%, respectively). Spring released run-of-river yearling Chinook showed lower descaling and mortality at middle than at the upper 1% operation (descaling means 1.0 and 11.5%, respectively and mortality means 0.5% and 4.4%, respectively). Summer tests showed similar trends for run-of-river subyearling Chinook. Descaling averaged 0.4% at the middle operating point and 2.6% at the upper 1% point; while mortality averaged 2.1% at the middle point and 4.3% at the upper 1% operating point.

**2) Smolt Monitoring Observations:** In 2007, observations from the Bonneville Smolt Monitoring Program indicated that mortality of Spring Creek National Fish Hatchery subyearling Chinook passing the dam in March and April were much higher than anticipated (D. Ballinger, pers. comm., 2007). Normally, mortality for these releases is in the low single digits; however in 2007 they were in the 10 to 12 percent range. The dead fish showed no evidence of physical trauma and a subsequent pathological evaluation showed no presence of disease. It was noted that mortality rates appeared to decline as the turbine unit loadings were decreased within the 1% peak efficiency operating band.

Observations in subsequent years have continued to support the turbine operations/fish condition relationship.

**3) Gatewell debris/turbine loading/fish condition relationships:** Higher mortality over historical levels continued which prompted questions relating fish condition relative to gatewell and VBS debris loading. Does gatewell debris result in the scattered higher injury rates noted later in the spring and early summer passage? Can increased gatewell cleaning reduce fish injury and mortality allowing operation within the normal turbine operating range? Increased cleaning may help reduce injury rates, however, the increased injury and mortality noted in the Gilbreath et. al. 2012 studies occurred with relatively clean gatewells. It is highly unlikely that increased maintenance alone would eliminate the problem.

**4) Powerhouse two turbine fish passage and survival rates:** Recent survival studies have provided survival and passage results for the PH2 turbines (Ploskey et al. 2011, Skalski et al. 2012 and Ploskey 2012). The 2010 study was a single release estimate that also included 81 km of river below the dam. The 2011 study was a virtual paired release study that assessed survival from the face of the dam to the first array a few kilometers below the dam. The 2010 and 2011 PH2 turbine survival point estimates for spring Chinook were 95.7% and 94.7%, respectively. The 2010 and 2011 survival point estimates for steelhead were 91.1 and 91.9%, respectively.

An important point to note is that fish guidance efficiency of the PH2 bypass system is low. In the two recent study years nearly twice as many fish passed through the turbines as through the screened bypass system. In 2010 and 2011, turbine passage (percentage of all fish passing into the intakes calculated as one minus FGE) for yearling Chinook was 71.4% and 64.6%, respectively, and for steelhead it was 74.3% and 61.7%, respectively. Another important point to consider is that the PH2 bypass system only passed a small percentage of the total project passage during these two study years. For each year, yearling Chinook bypass passage was 6.5% and 4.5% and steelhead bypass passage was 5.9% and 1.8%, respectively, of the project fish passage. The fact that the screens were pulled in May of 2011 has something to do with the low percentages for that year.

The Corps' Turbine Survival Program (TSP) has not yet conducted a bead and flow velocity/vector analysis of the second powerhouse unit model at the Engineer Research and Development Center (ERDC) in Vicksburg, Mississippi, however, this work is scheduled to occur during FY13 and 14. These data will help define fish passage conditions through the

turbine and draft tubes for different operating points. An agency ERDC trip occurred during the week of December 10, 2012. The following is an excerpt from the NOAA trip report:

***“Bonneville Second Powerhouse Turbine Operations:*** *For this work we used a 1:25 scale model of the second powerhouse turbines. Initial work on this objective was included in our trip report for the September 17- 20, 2012, trip (report dated October 29, 2012). For this investigation we observed the model at five unit flows of 11.3, 14.9, 19.1, 22.5 and 23.5 kcfs, which correspond approximately to the low and mid-levels of the 1% operating range, the generator limit (which is obtained a few hundred cfs below the upper 1% limit) and two flow levels above generator limit. The two flows above the limit were added to inform the consideration of future generator replacements, not for consideration in developing the 2013 operating limits. A head of 55’ was used for all but the highest flow level which required a lower head of 47’ to obtain in the model. We used the usual air, dye and bead methods (explained our previous trip reports) to investigate hydraulic conditions that would be encountered by fish passing through the turbine runner, elbow and draft tube environments.*

***Results:*** *In general, the hydraulic conditions in this turbine are really poor overall and gave the overall impression of a turbine/powerhouse design that was not well thought out. We did note, however, that hydraulic conditions improved somewhat as flow was increased up to the generator limit flow. Beyond this, flow characteristics may have improved slightly but not significantly. We did note that beads exited the draft tube into the tailrace better than in any other powerhouse turbine design that we have examined thus far, possibly due to the draft tube design. This may help explain the seemingly inconsistent observation of really poor hydraulic conditions in the runner and elbow environment and the normally high observed turbine survival through this powerhouse. The primary take away from the turbine work was the consensus that we should not operate these units at the low end of the peak range for fish passage. The quantitative bead analysis results are still several months away (due to ERDC’s workload) so a pre fish passage season operational decision will have to be made without these data.”*

Battelle has conducted sensor “fish” evaluations at the second powerhouse (Carlson et al. 2008). This study evaluated sensor passage conditions at the upper and lower 1% operations with target passage routes near the blade tip and hub. The data from the sensors indicated that pressure low points (nadirs) were higher (better for fish) at the lower operating point. The rate of pressure change is also an important metric for determining risk to fish passage; however, the sensor data did not indicate a dramatic difference between the two operating levels. A quality of flow metric was also used to examine sensor acceleration and rotation (an indication of turbulence) through the runner and draft tube environment. This metric did indicate that, at least for the hub releases (likely route of higher fish passage), flow conditions were somewhat better at the upper 1% operation. The results of this study do not directly predict differences in fish survival at the different operating levels; however, they did indicate that passage conditions do change as flows were dropped from the upper to lower 1% operations. The measured pressure nadirs improved somewhat, while the hydraulic passage conditions worsened. While we do not know the rate of change in passage conditions between the upper and lower operating points, it is likely that the differences between the upper and mid-point operations currently under consideration were lower.

Overall, the results of the sensor fish work and particularly the observations of the ERDC model tend to support minimizing the operation of these units at the lower end of the 1% range. The results also indicate that the difference in passage conditions between the mid-range and upper 1% operations are probably not large enough to warrant a specific concern in the current mid-range operation discussion.

**5) NERC generation flexibility requirements and AGC programming schedule: The North American Electric Reliability Corporation (NERC) develops and enforces reliability standards, monitors the bulk power system and annually assesses adequacy. As of June 18, 2007, the U.S. Federal Energy Regulatory Commission (FERC) granted NERC the legal authority to enforce reliability standards with all users, owners, and operators of the bulk power system in the United States. NERC requires automatic generation control (AGC) for the turbine units.** The July 2012, FPOM meeting minutes indicate that the AGC programming necessary for this change can be completed by the end of the 2012 calendar year at little or no extra cost to the O&M budget.

**6) Powerhouse One best operating point (BOP) MGR unit operation:** The normal turbine operating range for FCRPS units has been restricted to +/-1% of the peak efficiency operating point since the early 1990's. The rationale for this restriction was based mostly on limited experiments and best judgment of the professionals working on turbines and fish passage survival (Oligher and Donaldson 1966, Bell 1981, etc.). Fish survival data supporting the relationship between peak efficiency operation and fish survival has been weak at best. In their retrospective analysis examining the efficacy of the 1% rule, Skalski et al (2002) concluded that survival appears not to be directly related to peak efficiency. However, they did indicate that operating within the 1% range would likely encompass the maximum turbine passage survival, mainly due to the broad zone of operation within this range. In evaluating turbine designs as a part of the McNary Powerhouse Modernization Program in the early 2000's, members of the Corps' Turbine Survival Program noted that passage conditions inside the turbine environment in the physical model looked better for fish passage at unit flows somewhat above the 1% peak efficiency operating range in the McNary units. These improvements included better stay vane/wicket gate alignment, more open blade angles, much less turbulence below the turbine runner, much improved (less turbulent and better balanced) draft tube flows and higher draft tube egress flow velocities. Subsequent quantitative bead and velocity analyses developed by the Corps' Engineer Research and Development Center supported these observations and the so called Best Operating Point or BOP operation was developed from these observations defined in a TSP white paper from May 2011 - *Bonneville Dam First Powerhouse Kaplan Operations Revised Limits*. As it turns out, the best operating point for all turbine units in the FCRPS projects in the lower Snake and Columbia Rivers lie within the upper  $\pm 1\%$  peak efficiency range, except for the turbine units at McNary Dam and in Bonneville Dam PH1. BOP operation was not implemented at the McNary Project mainly due to concerns for reduced bypass fish condition that were observed due to increased gatewell flows and associated debris problems that resulted from the higher (~2 kcfs) unit loading.

Since the first powerhouse at Bonneville Dam does not have a screened bypass system, the TSP members considered this powerhouse as a potential candidate for BOP operation. Model investigations were conducted in 2010 by the Corps' Engineer Research and Development

Center(see Appendix A for the NOAA trip report).A physical evaluation of the minimum gap runner (MGR) turbine units in this powerhouse indicated a best operating point flow level of about 1.5 kcfs higher than the current upper 1% operating range flow limit. The model bead strike analysis indicated that this flow level had significantly lower bead strike and severe direction change scores for passage conditions within the runner environment and better draft tube egress velocities than the operating points within the peak efficiency range. While no rigorous biological evaluation of the best operating point has been done to date, there was a biological evaluation of the powerhouse one MGR units conducted in 2000 (Normandeau 2000). This study evaluated balloon-tagged fish survival at four operating points including one that was similar to the best operating point (10.5 kcfs). Of the four operating points tested in that study, the 10.5 kcfs point (what the researchers called power level three) returned the highest survival point estimate. However, it should be noted that the estimate for this point was not statistically different from those measured for the other three points.

While it appears from the data examined to date, that survival through the first powerhouse units at BOP would at least be no worse than survival within the one percent, there are other issues to consider. Higher flow passage through turbines can result in low within-runner pressure nadirs. These more extreme low pressure levels can injure or kill fish passing through the runner environment, particularly if they pass near the pressure (lower) side of the runner blades. These pressure levels are most severe in low tailwater (high head) conditions. Therefore, operating these units at flows higher than the BOP should be discouraged. Also, operation even at BOP should be limited at the higher head levels. These limitations will be incorporated in the updated Corps' Hydraulic Design Center PH1 unit operating tables for the 2013 Fish Passage Plan.

PH1 Turbine Survival: For reference, the recent project survival studies have included estimates for first powerhouse turbine passage (Ploskey et al. 2011, Skalski et al. 2012 and Ploskey 2012). The 2010 study was a single release estimate that also included 81 km of river below the dam. The 2011 study was a virtual paired release study that assessed survival from the face of the dam to the first array a few kilometers below the dam. The 2010 and 2011 PH1 turbine survival point estimates for spring Chinook were 98.7% and 96.8%, respectively. The 2010 and 2011, survival point estimates for steelhead were 90.0% and 93.6%, respectively. Turbine passage estimates (one minus powerhouse sluiceway efficiency) in 2010, for yearling Chinook and steelhead were 77.0% and 59.2%, respectively. No estimates were available for 2011.

**7) Adult passage concerns – spillway approach and Bradford Is. Fallback:** A simple shift of flow from the second powerhouse to the first powerhouse is not without fish issues beyond the concerns for BOP operation. The region has long known that adult salmonid fallback through the spillway of fish passing the Bradford Island exit is higher than for adults passing the Washington shore exit (Bjornn et al. 2000, Boggs et al. 2004). A shift in flow from reducing the second powerhouse unit loadings to the midpoint of the 1% operating range would shift about 30 kcfs of the river flow to the first powerhouse. Depending on river flow, this shift could affect passage distribution of adults at the project resulting in increased number of adults exposed to fallback through the spillway. Prior to the arrival of sea lions in the tailrace, the mortality consequence of fallback was considered significant (Boggs et al 2004). Since the arrival of sea lions in the project tailrace in the early 2000's, the consequence of fallback has likely increased. We do not know if fish that fall back through the spillway have a higher chance of being preyed

upon but we can conclude that they at least have to face the same predation rate that they did when first approaching the dam, which has varied from 0.4% to 4.2% since consumption studies began in 2002 (Stansell et al. 2011). Bjornn et al. (2000, Figure 25) indicated that fallback increased with increasing spill levels, however it appeared that the graphs were influenced somewhat by the lower levels of fallback associated with lower (~100 kcfs) spill levels. Delay in the tailrace due to increasing spill may also be a factor leading to higher sea lion predation levels. Caudill et al. (2005draft) reported that delay didn't appear sensitive to increases in spill levels once the spill flow was in the "high" category of 85 to 160 kcfs.

To address the conflict between juvenile benefits and adult impacts, the FPOM Task Group developed a benefits analysis that compared the juvenile benefits of a mid-range PH2 operation to the adult risks. The Task Group discussed several analytical methods and settled on a comparative analysis that examined the effects of the mid-range operation on juvenile and adult spring Chinook salmon. Spring Chinook were chosen primarily because they were the species most likely to be impacted by the operation. Also, adult spring Chinook are the predominate adult passage stock present during the spring months when this operation would most likely occur. Juvenile sockeye remain a concern, and the Task Group decided that, while this species would most likely be well protected by the spring Chinook-based operation, there may be times near the end of the run when juvenile sockeye may need additional protection. During this time, mid-range PH2 operations to facilitate juvenile sockeye passage (vs. adult passage) would be addressed on a case by case basis via in-season management and observations of the Smolt Monitoring Program.

The details of adult spring Chinook passage at Bonneville Dam are presented in Appendix B and the adult vs. juvenile passage analysis is presented in Appendix C. A primary concern was the shift in adult passage from a lower fallback rate passage route (Washington shore ladder) to a higher fallback route (Bradford Island ladder). These shift would likely cause higher project adult passage fallback with associated mortality due to fallback-related injuries and sea lion predation. Data provided by the Fish Passage Center (Appendix B) indicated that this flow vs. adult shift was insignificant when spill flow levels in the range of voluntary spill levels (Appendix B, Figures 9 and 10). However, when spill levels went above the voluntary levels (Appendix B, Figures 11 and 12), adult passage began to shift towards Bradford Island indicating that fallback rates would likely began to rise. The analysis in Appendix C compared the juvenile spring Chinook survival improvement expected from the mid-range operation at PH2 (based on Gilbreath et al. 2012) with the expected increase adult loss rate (adjusted for SARs) from fallback at PH1 (Bradford Island). This analysis indicated that the benefits to juvenile spring Chinook would be eclipsed by adult spring Chinook fallback losses when adult spring Chinook passage exceeded juvenile spring Chinook Smolt Monitoring Program collection counts. Thus, this passage ratio is proposed as the new trigger for mid-range operations at Bonneville Dam and forms the basis for the proposed new operational language for the Fish Passage Plan change form presented in conclusion section below.

**8) Total dissolved gas (TDG):** A discussion with Oregon Department of Environmental Quality (ODEQ) staff early in 2012 indicated that any flow that results in increased TDG above the 120% tailrace waiver would be viewed as a violation of water quality standards. They also recognize that these powerhouses have hydraulic capacity limits and that involuntary spill occurs

once those hydraulic capacities are reached. These hydraulic capacities are limited by many things including best operations for fish passage. The 2008 BiOp (RPA27) states that FCRPS turbine units are to be operated “to achieve best fish passage survival”. The currently accepted guideline is to operate within the 1% peak efficiency band and this limitation is not exceeded even during high river flow events that push total dissolved gas levels above the 120% waiver limit. Restricting Bonneville Dam’s second powerhouse to a mid-level operation follows the RPA27 guidance in operating these units for best fish passage survival. Exceeding the 120% TDG level for this purpose is no different than maintaining the 1% operation. Any turbine operating limits should be reconsidered as TDG levels approach 130%.

**9) Bonneville Generation Limitations:** The Western Electric Coordinating Council (WECC) is the largest and most diverse of the eight Regional Entities that have Delegation Agreements with the NERC. Current WECC standards are causing temporary restrictions on generation capacities of the Bonneville Dam 115kv and 230kv transmission lines. These limitations are seasonal and based on ambient temperature. For the 2013 fish passage season, the March 16 – May 31, 2013, restrictions of 160 MW and 816 MW for the 115kv and 230 kV lines, respectively, are most relevant. These limitations translate to a maximum turbine capacity (combined powerhouses) of 227.0 kcfs and a total project capacity w/o spill (but with miscellaneous flow) of 238.6 kcfs. Modeling by BPA using the high flows of the past two years has indicated that powerhouse one capacity (115kV line) could be reduced from 0 to 15 kcfs. These limitations are most restrictive in March when the tailwater is low and head is the greatest (i.e., when the generation capacity of the project is greatest). The effect of this limitation remains to be seen pending seasonal flows. While it seems unlikely, it is possible that there will be some limitation of the capacity of powerhouse one to pick up flow from powerhouse two during the limitation period. The limitation ends 2400 hours, May 31, 2013.

**10) Gatewell Improvement Program alternatives and schedule:** The Bonneville Second Powerhouse Fish Guidance Efficiency (FGE) Program Post Construction evaluation is an ongoing effort to understand and improve the gatewell environment and downstream passage at the Second Powerhouse.

Computational Fluid Dynamics (CFD) modeling conducted in 2010-11 indicates that gatewell hydraulic conditions may be improved by filling the Submersible Traveling Screen (STS) guide slot above the STS turning vane on both sides of the gatewell. Proof of concept testing of a Gatewell Turbulence Reduction Device (TRD) to fill this volume is underway for 2013 and will test the hypothesis that filling the guides above the STS will improve gatewell flow conditions, thereby reducing injury and mortality at the upper 1% peak efficiency turbine operation range. Results from this testing will provide hydraulic and biological information necessary during prototype design. A concurrent investigation into the gatewell environment will identify biological and hydraulic metrics necessary to evaluate flow control alternatives in numerical and physical models. A prototype design will follow results from TRD proof of concept testing and analysis of alternatives. A prototype will allow a check for errors, adjustments, and modifications to a target gatewell hydraulic and biological condition. This phase may extend one to two seasons, 2014-2015, based on performance and cost. Construction of the preferred alternative during the next phase, 2016, will follow and may extend from one to three seasons. The time duration will depend on complexity of design, costs, and operational requirements.

**Conclusion:** The following language was developed by the Bonneville Operations FPOM Task Group based on the preceding information and the appendices attached to this memo. The language was discussed at length during an April 11, 2013, Task Group meeting. The two day component of the adult to juvenile trigger was adopted to help prevent premature implementation of the operation. The language will be presented to the full FPOM committee as a Fish Passage Plan Change Form for consideration in operation of the Bonneville Project during 2013.

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**Location of Change:** BON 5.2 and 5.3, Table BON-16 (re-numbering will occur as needed)

**Proposed Change:**

**5.1.** Powerhouse priority is detailed in **Table BON-14**. When splitting flows, as directed in section **2.1.2**, the top two available priority units for PH1 will be operated first followed by normal unit priority at PH2. If there is a need for more units, and all available units at PH2 are in operation, proceed with the normal unit priority for PH1.

**5.2. November 1 through March 31.** All turbine units will operate *as a soft constraint* within  $\pm 1\%$  of peak efficiency (within upper and lower limits of the 1% range) as shown in **Tables BON-15(PH1)** and **BON-16 (PH2)** for project heads of 35-70 feet. See **BPA Load Shaping Guidelines (Appendix C)** for further information on turbine operations within and outside of the 1% range.

**5.3. April 1 through October 31.** Except as defined below in **section 5.3.1**, all turbine units will operate *as a hard constraint* within  $\pm 1\%$  of peak efficiency (within upper and lower limits of the 1% range) as shown in **Tables BON-15 (PH1)** and **BON-16 (PH2)**.

**5.3.1. April 10 through August 31.** During the spring and summer spill seasons when the project is spilling in accordance with the Fish Operations Plan (FOP, see **Appendix E**), turbine units will operate in the following priority order to pass increasing flow:

6. Operate PH2 units within the 1% mid-range (**Table BON-16**);
7. Then, operate PH1 units up to the 1% upper limit (**Table BON-15**);
8. Then, operate PH1 units up to Best Operating Point (BOP; **Table BON-15**);
9. **From April 10 through June 20 (spring spill season)**, additional flow above what can be passed in steps 1-3 will be passed in one of the two following ways, as directed by Project Fisheries based on monitoring of juvenile and adult spring Chinook passage and collection data:
  - a. If the adult trigger is met (adult counts exceed juvenile collection counts for two consecutive days), then operate PH2 up to the 1% upper limit in the following unit priority order: 18, 17, 16, 15, 14, 13, 12, 11 until adult counts drop below juvenile counts for 3 consecutive days.

- b. If the adult trigger is *not* met (adult counts are less than juvenile collection counts for two consecutive days), then increase spill to pass the additional flow.

**10. From June 21 through August 31 (summer spill season),** additional flow above what can be passed in steps 1-3 will be passed by operating PH2 up to the 1% upper limit.

**5.4.** The project turbine unit maintenance schedules will be reviewed by Project and Operations Division biologists for fish impacts. If possible, maintenance of priority units will be scheduled for winter maintenance periods, or when there are low numbers of fish passing the project.

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## FILE MEMORANDUM

**FROM:** Gary Fredricks and Ed Meyer

**SUBJECT:** ERDC Trip Report – Bonneville Dam Turbine Operations

**Participants:** Bob Davidson – COE ERDC, Martin Ahmann – COE NWW, Dennis Schwartz and Chris Lightner – COE NWP, Rod Wittinger and Jim Kiel - COE HDC, Eric Volkman - BPA.

**Purpose of the trip:** The overall goal is to improve turbine survival for fish passing Bonneville Dam. The primary purpose of this trip was to investigate hydraulic conditions that exist over a specific range of operations in the First Powerhouse minimum gap runner turbine units, with an eye towards the possible revision of operating guidelines for the 2011 fish passage season. A secondary purpose was to make some preliminary operating range observations of the Second Powerhouse turbine units.

**Methods:** We used the 1:25 scale single unit sectional models for each powerhouse to assess hydraulic passage conditions at several turbine operating points. These models are constructed primarily of Plexiglas allowing unobstructed views of the flow passage routes. The models were set at 55 feet of head for most of the observations, although a head of 60 feet was checked for some of the runs. The primary observational methods included observing dye, neutrally buoyant bead and air bubble passage through the primary turbine passage routes. The First Powerhouse model has been verified and has been used for quantitative bead analysis by the ERDC staff. Data summaries of this bead analysis were reviewed by the group between model observations. The Second Powerhouse model was recently completed and has not undergone the verification process. Observations made with this model were very general and were made with the understanding that the flow control settings (wicket gate, blade angle, etc.) might not be quite right at this time.

### **Results: First Powerhouse Model.**

Lower 1% limit (7.3 kcfs). Model observations: We noted a significant amount of turbulence below the runner. The hydraulic “rope” (a spinning vortex extending into the draft tube elbow from the hub) is strong near the hub but there is also quite a lot of twist in the beads that pass the outer section of the blades. There was some residual turbulence from the “rope” in the draft tubes. Overall, conditions looked poor for fish passage.

Peak efficiency (7.5 kcfs). Turbulence below the runner looked substantially better. Still some direction changes in the beads and air bubbles, but no actual sustained rope. We observed nothing that would suggest a serious problem with passage below the hub. Overall, better fish passage conditions.

Upper 1% limit (9.8 kcfs). This operation was examined after the 11.5 kcfs operation (described below). We saw little difference between the two.

Best operating point (11.5 kcfs). Much more uniform flow below the runner. With air bubbles we could see a small, short-lived rope just below the hub. Beads looked good, some slight spin in those that passed near the hub. Dye moved quickly through the runner and draft tube with little apparent turbulence. Overall, conditions looked good for fish passage.

Upper operating (generator) limit (13 kcfs). Flow looked smooth through the runner and draft tubes. Dye passed through very quickly indicating high velocities through the entire turbine environment. This helped improve the immediate tailrace environment with better looking downstream egress conditions. Overall, the condition looked good for fish but we were concerned that the higher flow could lead to some pressure issues. The operation should be tested with sensor fish before considering it for use during the fish passage season.

**First Powerhouse Bead Analysis Summary:** The bead analysis was conducted by the ERDC staff using high speed (1,000 frames per second) cameras. The analysis used approximately 9,000 white, cylindrical, neutrally buoyant plastic beads that would approximate a smolt sized (4") object if scaled up to model size. Bead passage was analyzed for strike and direction changes (an indication of turbulence). The cylindrical shape allows the observer to determine if the bead is tumbling which helps with determining the severity of strike or direction change. Flow velocities were measured with a laser Doppler velocimeter or LDV. This analysis was done at peak (7.5 kcfs), upper 1% (9.8 kcfs) and best operating point (11.5 kcfs) operating points with 55 and 60 feet of head. The lower end of the 1% operating range point was not included in the analysis.

In general, the bead analysis reflected what we saw in the model. In the runner region of the unit, blade contact and severe direction change decreased with increasing unit discharge. The rate of change also decreased with increasing discharge, i.e., the magnitude of change was greater between peak and upper 1% than between upper 1% and the best operating point (we can only assume that this inverse relationship would also be true between the lower 1% and peak operating points). In the distributor area (stay vane and wicket gates), the strike and severe velocity change data indicated little difference between discharge levels, although vane-gate gap passage decreased slightly with discharges above peak flow.

Unit flow was consistently split fairly evenly between the draft tube barrels with 60% passing the A (north) barrel and 40% passing the C barrel at all discharge levels. The consistency of this split was at least partly due to the unique horizontal flow splitters used in this powerhouse. Tailrace observations of beads indicated quicker egress time for higher discharges, as expected. Another tailrace observation indicated that slightly more beads (2-3% more) neared the surface after passing out of the draft tube at higher discharges.

**Second Powerhouse Model.** After looking at a couple of flow conditions in this model it became apparent that the model wasn't set up correctly. Bob Davidson indicated that there was probably an issue with the cam settings since the model flow was about 9% lower than it should

have been for the settings provided. The Corps will get this worked out for later model work. For this trip, we just looked at the general trends in flow conditions as flow was incrementally increased from the lower end of the 1% operating range. About all that can be said about these observations is that flow conditions in the runner and draft tube areas looked poor at the lower end of 1% and improved as more flow was added, i.e., the trend was the same as we observed for the First Powerhouse units (and for units at other dams that we have examined).

### **Recommendations:**

**First Powerhouse:** Based on the model observations and the bead analysis data, we recommend that the Corps consider moving the lower operating limit of these units up from the lower end of the 1% range to the peak efficiency point, at least as a soft constraint. We also recommend that the Corps investigate adopting a new upper operating limit at the best operating point (the 11.5 kcfs point under the model head condition tested). This shift to a higher than 1% peak limit should include an investigation of the existing biological data for these units.

**Second Powerhouse:** Assuming that the trend we observed where hydraulic conditions improved with increasing flow is correct, we believe it would be prudent to consider minimizing the time these units operate at the low end of the 1% operating range. We have no specific operating point recommendation; however a soft constraint limit approximately midway between the low end of 1% and the peak efficiency operating points would likely avoid the most severe hydraulic conditions. In the meantime, the Corps should complete the model verification process and conduct a bead analysis.



## FISH PASSAGE CENTER

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• **MEMORANDUM**

TO: Tom Lorz, CRITFC  
Gary Fredricks, NOAA  
Trevor Condor, NOAA

FROM: Fish Passage Center Staff

DATE: March 26, 2013

RE: Evaluation of Bonneville Dam project operations on the preference of adult salmonids to enter the Bradford Island fish ladder

In response to your request, the Fish Passage Center has compiled data on Bonneville Dam project operations and has evaluated the impact of these operations on the preference of adult salmonids to enter the Bradford Island fishway. Our findings indicate:

- Our findings indicate that the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) did not clearly explain variations in salmonid ladder preference over the spring periods from 2008-2012. When the dataset was partitioned into Chinook and Steelhead individually and further divided into periods of daily spill between 95-105 Kcfs and days of spill above 105 Kcfs, regressions were still not significant.
- When all five years of springtime data (April 1-June 30: 2008-2012) were combined into a single regression that explored the relationship between the proportion of salmonids passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total), the result was a weak relationship (Figure 6).
- When the data in Figure 6 were divided into Chinook and Steelhead individually, similar weak relationships resulted (Figures 7 and 8). When these regressions were weighted by daily counts, the regression relations did not improve significantly (Tables 1 and 2).
- When the data for Chinook and Steelhead (from Figures 7 and 8) were broken into periods when daily average spill levels at Bonneville Dam were between 95-105 Kcfs

and days when spill levels were above 105 Kcfs and weighted for daily fish numbers, regressions were still not significant (Figures 9-13, Tables 3-6).

The daily average Bonneville Dam operational data were obtained from: <http://www.nwd-wc.usace.army.mil/perl/dataquery.pl>.

The following daily average variables were utilized from the above website: Bonneville Total Powerhouse Discharge, Bonneville Powerhouse Two Discharge, and Bonneville Spillway Discharge. Spring data between April 1 and June 30 was obtained within the years 2008-2012. For this evaluation it was necessary to obtain discharge from Bonneville Dams Powerhouse One. As this information is not available at the COE data query website (above), discharge through Powerhouse One was calculated by subtracting Powerhouse Two discharge from Total Powerhouse Discharge.

Adult and jack counts by ladder at Bonneville were obtained from the COE fish count website at: <http://www.nwp.usace.army.mil/Missions/environment/fishdata.aspx>.

Figures 1-5 display daily average Bonneville Dam powerhouse and spillway operations as well as the proportion of total salmonids that passed the Bradford Island fishway on a daily basis over the April through June period over the years 2008-2012.

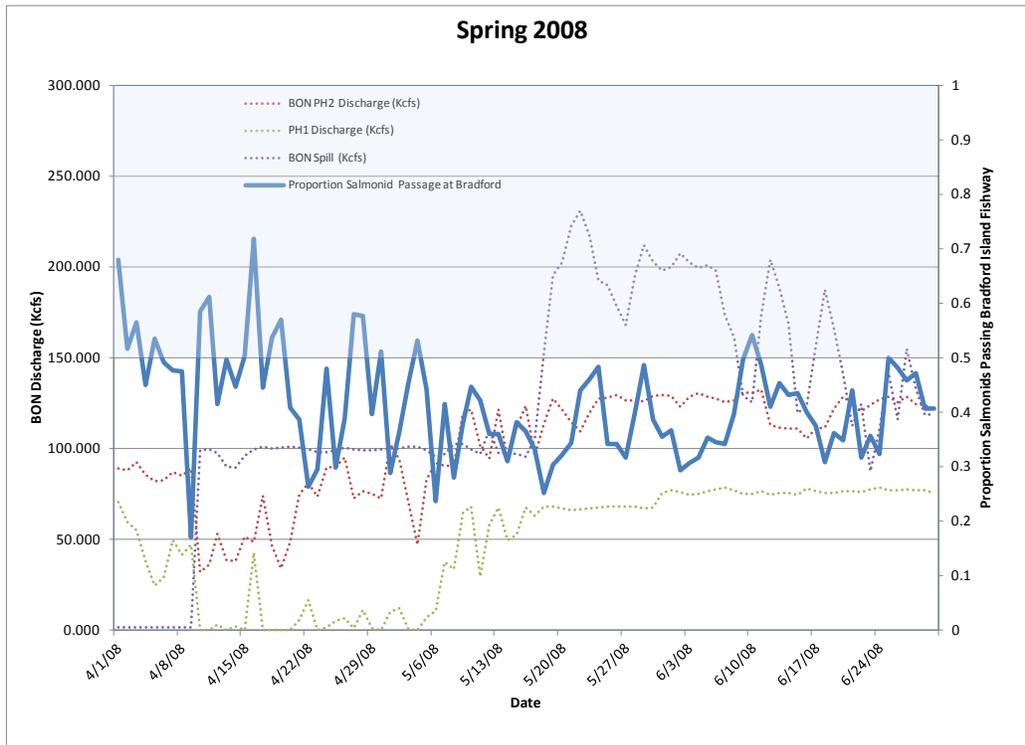


Figure 1. Bonneville Dam powerhouse and spillway operations as well as the proportion of total salmonids that passed the Bradford Island fishway on a daily basis over the April to June period of 2008.

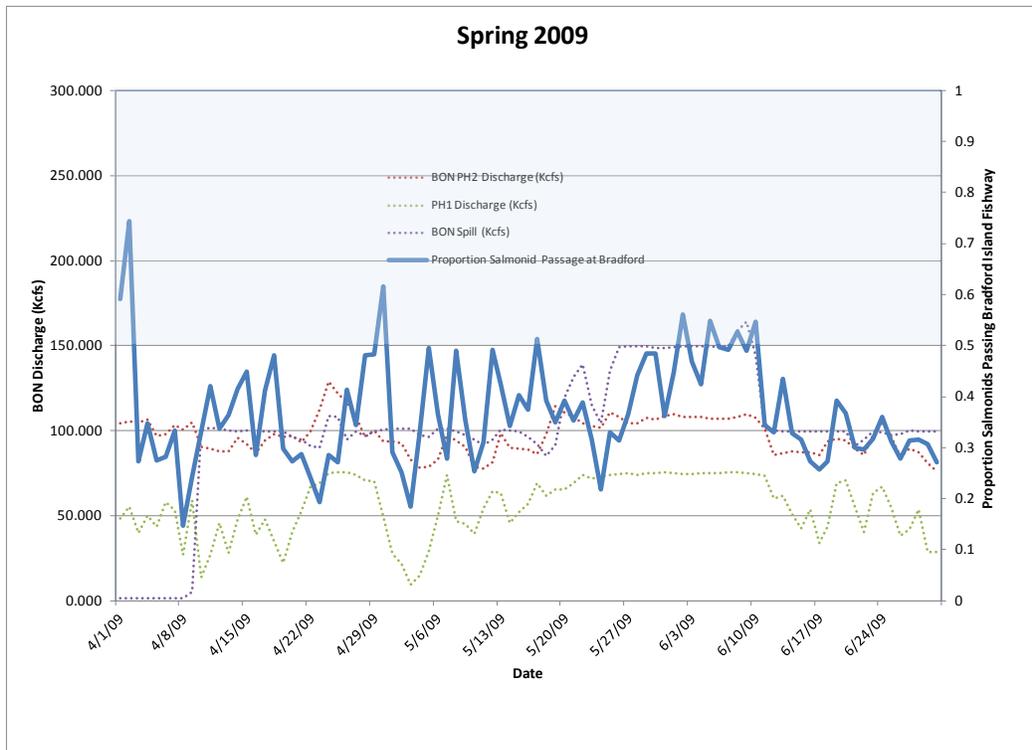


Figure 2. Bonneville Dam powerhouse and spillway operations as well as the proportion of total salmonids that passed the Bradford Island fishway on a daily basis over the April to June period of 2009.

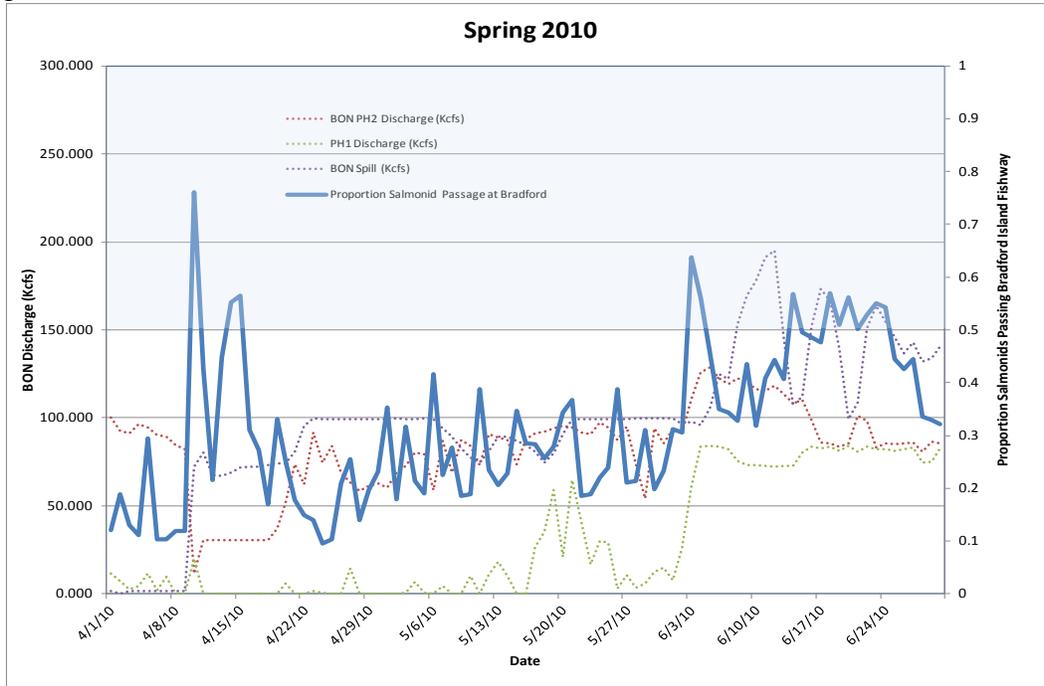


Figure 3. Bonneville Dam powerhouse and spillway operations as well as the proportion of total salmonids that passed the Bradford Island fishway on a daily basis over the April to June period of 2010.

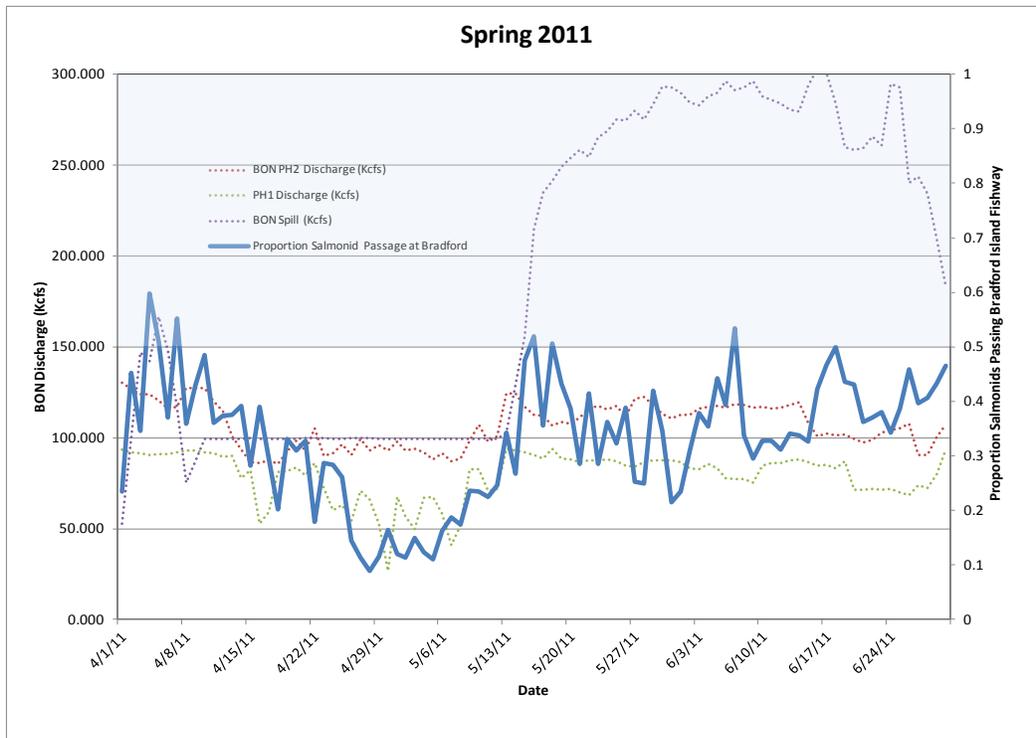


Figure 4. Bonneville Dam powerhouse and spillway operations as well as the proportion of total salmonids that passed the Bradford Island fishway on a daily basis over the April to June period of 2011.

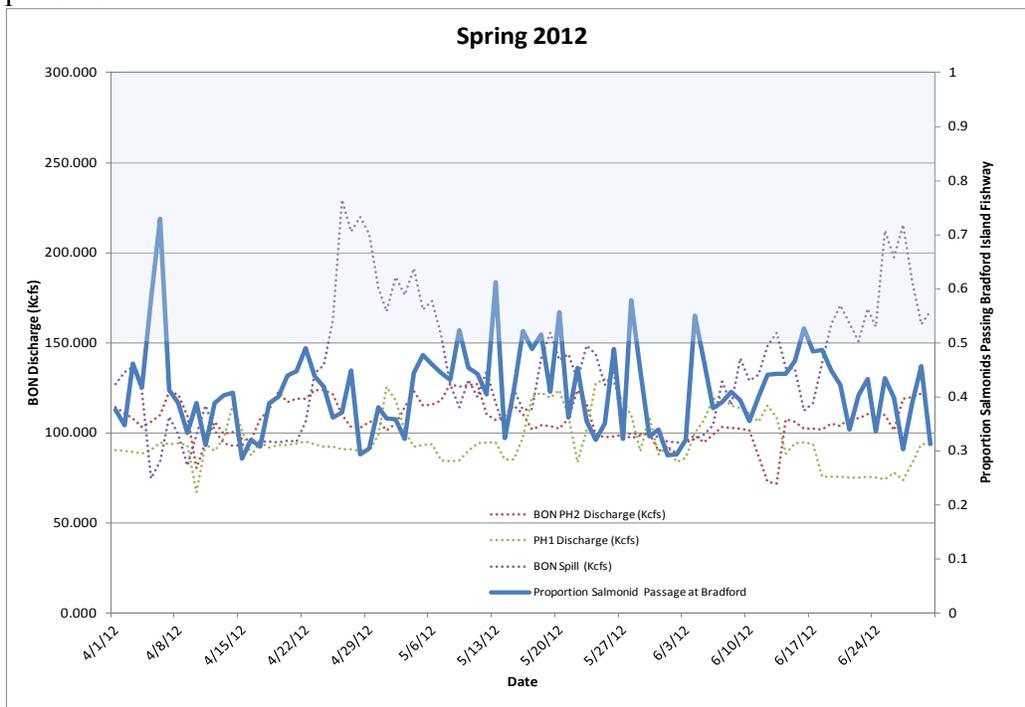


Figure 5. Bonneville Dam powerhouse and spillway operations as well as the proportion of total salmonids that passed the Bradford Island fishway on a daily basis over the April to June period of 2012.

The spring period was the primary period of interest in determining whether the proportion of flow through powerhouse one can explain the proportion of adults passing the Bradford fishway. All five years of springtime data were combined into one regression that explored the relationship between the proportion of salmonids passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total). Figure 6, displays the relationship between the proportion of salmonids passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using spring data (April through June) over the years 2008-2012 at Bonneville Dam.

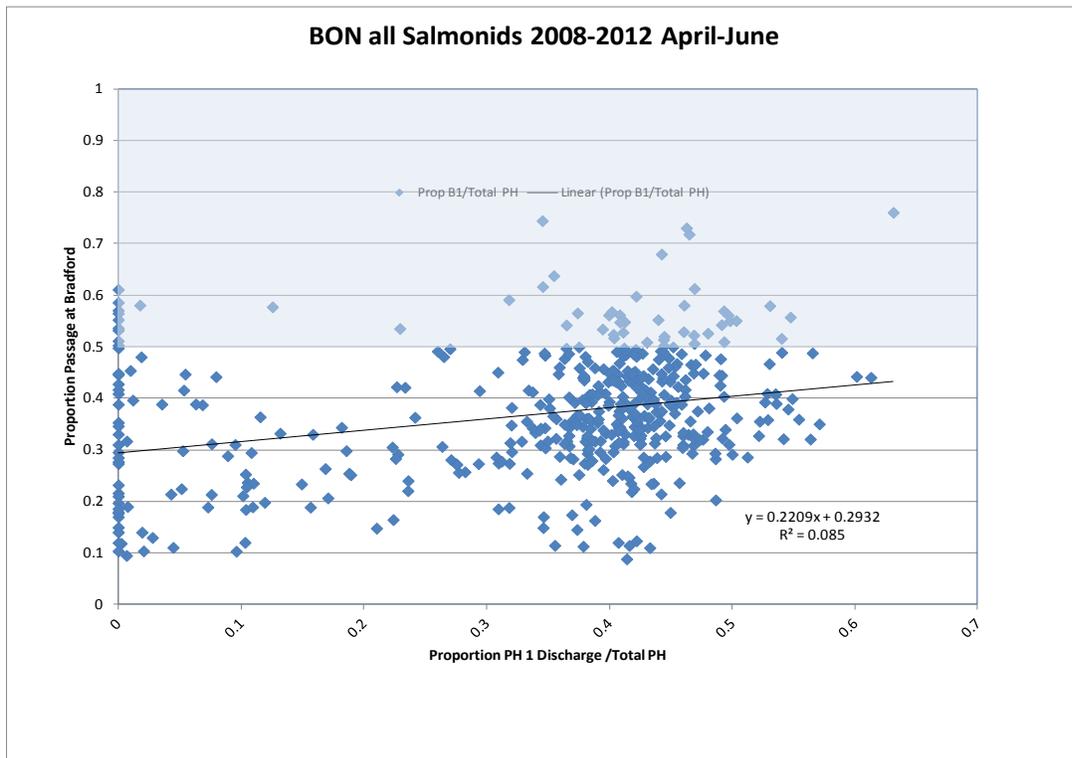


Figure 6. Relationship between the proportion of salmonids passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using spring data (April through June) over the years 2008-2012 at Bonneville Dam.

Figure 6 included all salmonids passing Bonneville Dam over the April-June period (2008-2012), for the sake of finding a better fit to the data it was of interest to create similar plots as Figure 6, however for Chinook and Steelhead, individually. Figures 7 and 8 display the relationship between the proportion of Chinook (Figure 7) and Steelhead (Figure 8) passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using spring data (April 1 through June 30) over the years 2008-2012 at Bonneville Dam.

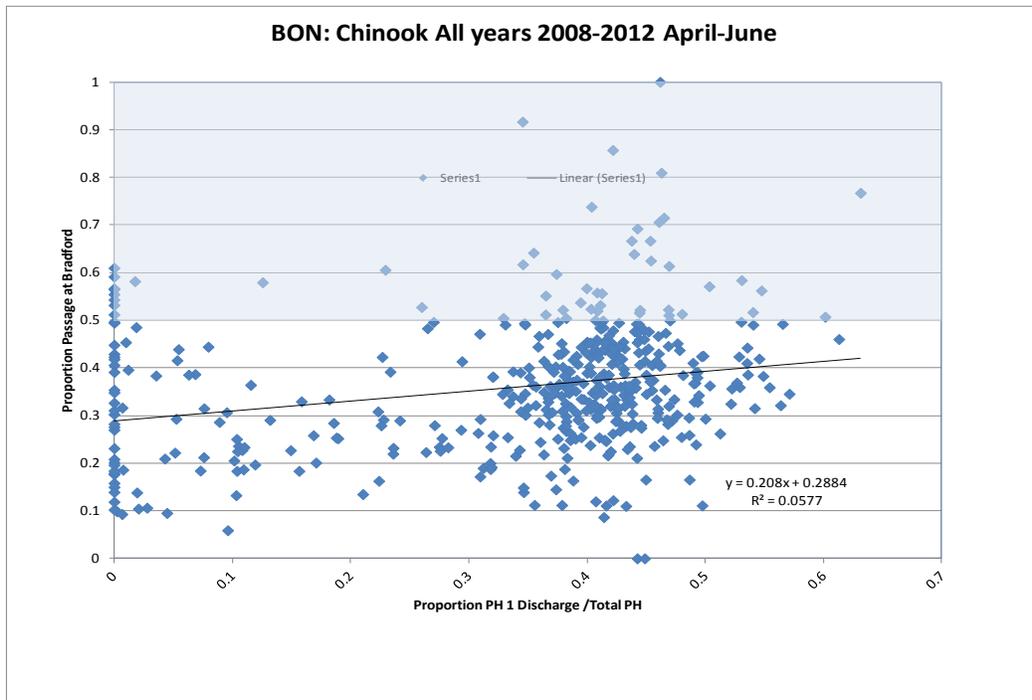


Figure 7. Relationship between the proportion of Chinook passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using spring data (April through June) over the years 2008-2012 at Bonneville Dam.

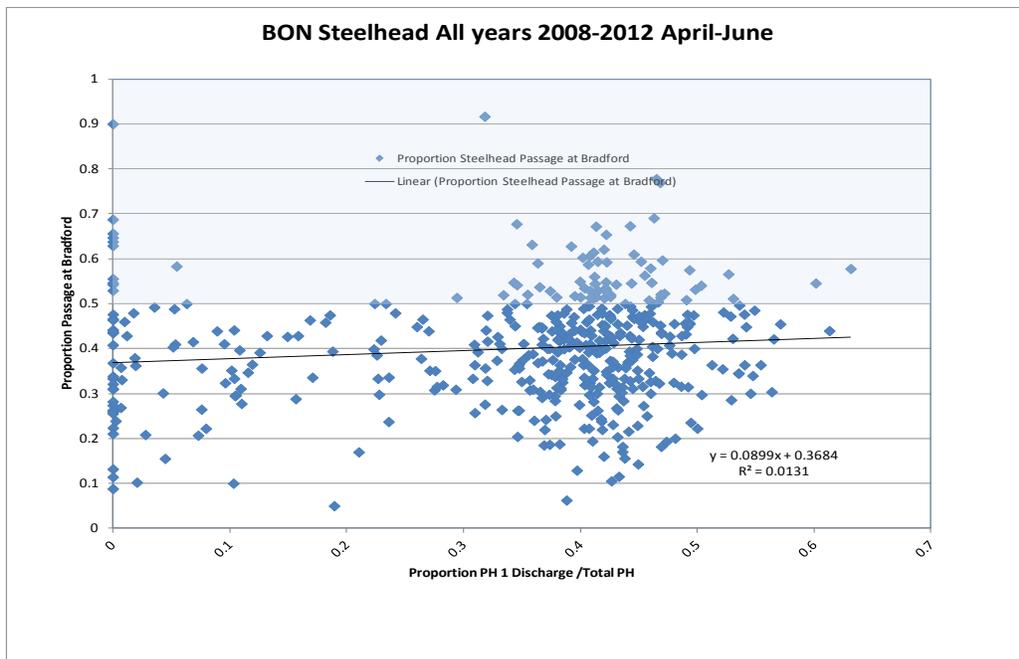


Figure 8. Relationship between the proportion of Steelhead passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using spring data (April through June) over the years 2008-2012 at Bonneville Dam.

Based on Figures 7 and 8, the regressions that utilize Chinook and Steelhead individually, did not improve the relationships between the proportion of fish passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge.

Additionally, the data from Figures 7 and 8 was imported into Systat to determine if weighting the datasets (by inverse binomial variance) led to a better fit to the regressions. Tables 1 and 2, display the output from Systat for Chinook and Steelhead, respectively. The weighting procedure in Systat also did not demonstrate a significant improvement to the regressions.

Table 1. Chinook adults 2008 to 2012 proportion Bradford vs. proportion PH1 of Total PH. Weighted regression (inverse variance using theoretical binomial variance).

Dependent Variable	PR_BRAD
N	452
Multiple R	0.30075
Squared Multiple R	0.09045
Adjusted Squared Multiple R	0.08843
Standard Error of Estimate	16.14505

Regression Coefficients $B = (X'X)^{-1}X'Y$						
Effect	Coefficient	Standard Error	Std. Coefficient	Tolerance	t	p-value
CONSTANT	0.23862	0.75947	0.00000	.	0.31420	0.75352
PR_B1	0.23086	0.03451	0.30075	1.00000	6.68948	0.00000

Table 2. Steelhead adults 2008 to 2012 proportion Bradford vs. proportion PH1 of Total PH. Weighted regression (inverse variance using theoretical binomial variance).

Dependent Variable	PR_BRAD
N	455
Multiple R	0.27904
Squared Multiple R	0.07786
Adjusted Squared Multiple R	0.07583
Standard Error of Estimate	2.71064

Regression Coefficients $B = (X'X)^{-1}X'Y$						
Effect	Coefficient	Standard Error	Std. Coefficient	Tolerance	t	p-value
CONSTANT	0.31409	0.12787	0.00000	.	2.45638	0.01441
PR_B1	0.22740	0.03677	0.27904	1.00000	6.18470	0.00000

The last portion of this evaluation involved utilizing the data from Figures 7 and 8 but limited the data used in plots to 1) days when spill levels were between 95-105 Kcfs, and 2) days when spill levels were above 105 Kcfs. The dataset for each species and spill level was imported into Systat and weighted by daily fish numbers.

Figures 9 and 10 and Tables 3 and 4 display the relationship between the proportion of Chinook (Figure 9, Table 3) and Steelhead (Figure 10, Table 4) passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using only the spring data (April through June) with Bonneville Spill levels between 95-105 Kcfs over the years 2008-2012 at Bonneville Dam. Tables 1 and 2, display the output from Systat for Chinook and Steelhead, respectively.

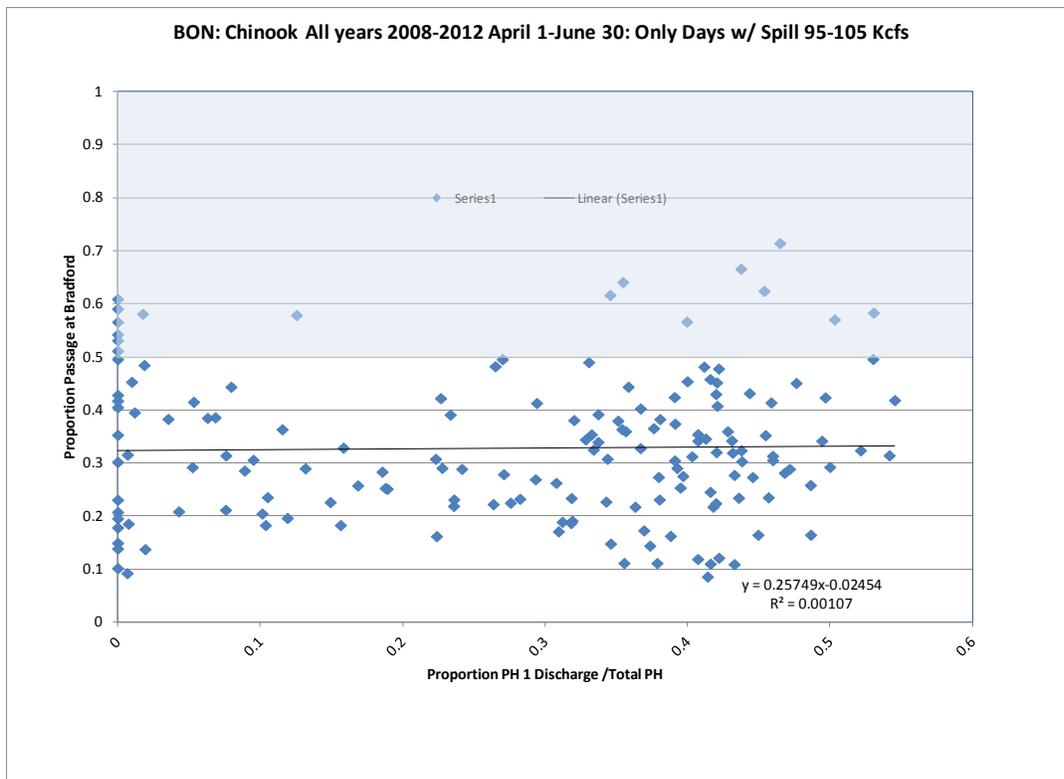


Figure 9. Relationship between the proportion of Chinook passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using only spring data (April through June) with Bonneville Spill levels between 95-105 Kcfs over the years 2008-2012 at Bonneville Dam.

Table 3. Chinook adults 2008 to 2012 proportion Bradford vs. proportion PH1 of Total PH, only days with spill levels between 95-105 Kcfs. Weighted regression (inverse variance using theoretical binomial variance).

<b>Dependent Variable</b>	PROP_BRAD
<b>N</b>	161
<b>Multiple R</b>	0.03278
<b>Squared Multiple R</b>	0.00107
<b>Adjusted Squared Multiple R</b>	0
<b>Standard Error of Estimate</b>	19.11556

Regression Coefficients  $B = (X'X)^{-1}X'Y$

Effect	Coefficient	Standard Error	Std. Coefficient	Tolerance	t	p-value
<b>CONSTANT</b>	0.25749	1.5066	0	.	0.17091	0.86451
<b>PROP_B1</b>	-0.02454	0.05936	-0.03278	1	-0.4135	0.6798

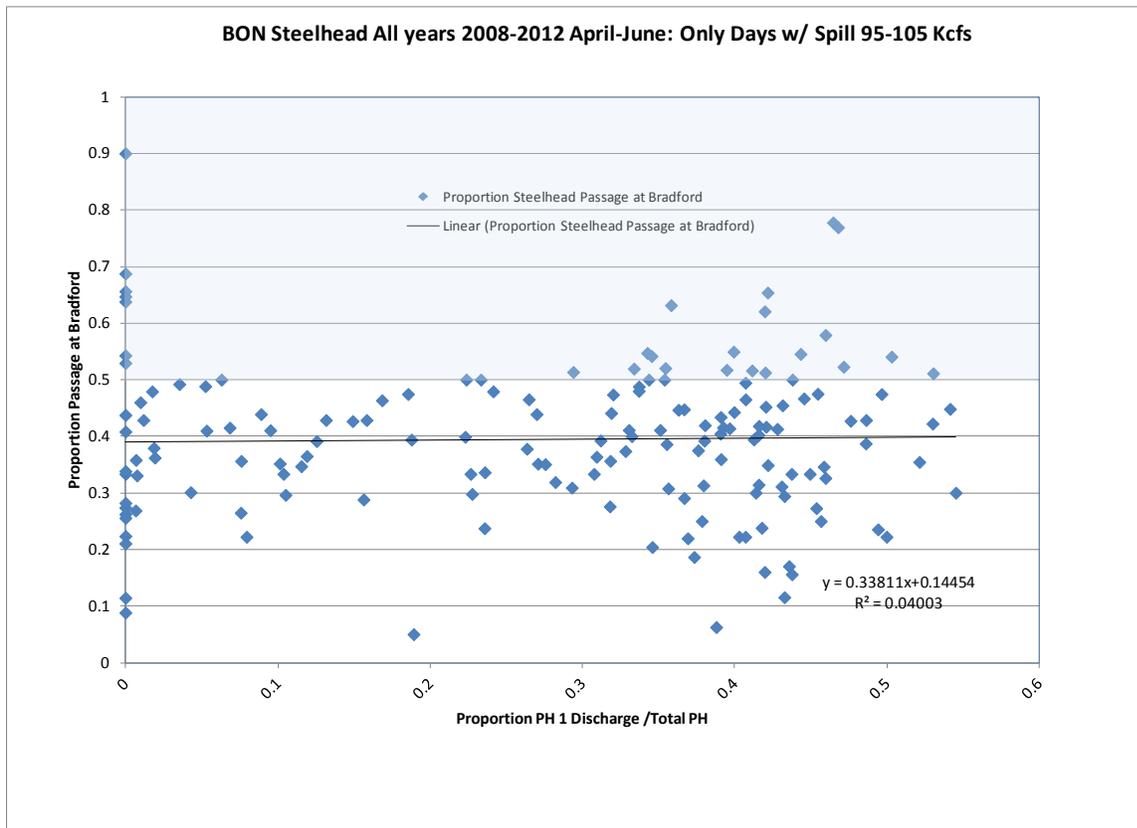


Figure 10. Relationship between the proportion of Steelhead passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using only spring data (April through June) with Bonneville Spill levels between 95-105 Kcfs over the years 2008-2012 at Bonneville Dam.

Table 4. Steelhead adults 2008 to 2012 proportion Bradford vs. proportion PH1 of Total PH, only days with spill levels between 95-105 Kcfs. Weighted regression (inverse variance using theoretical binomial variance).

<b>Dependent Variable</b>	PROP_BRAD
<b>N</b>	161
<b>Multiple R</b>	0.20007
<b>Squared Multiple R</b>	0.04003
<b>Adjusted Squared Multiple R</b>	0.03399
<b>Standard Error of Estimate</b>	2.30831

Regression Coefficients  $B = (X'X)^{-1}X'Y$

Effect	Coefficient	Standard Error	Std. Coefficient	Tolerance	t	p-value
<b>CONSTANT</b>	0.33811	0.18272	0	.	1.8504	0.06611
<b>PROP_B1</b>	0.14454	0.05614	0.20007	1	2.57488	0.01094

Figures 11 and 12 and Tables 5 and 6 display the relationship between the proportion of Chinook (Figure 11, Table 5) and Steelhead (Figure 12, Table 6) passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using only the spring data (April through June) with Bonneville Spill levels above 105 Kcfs over the years 2008-2012 at Bonneville Dam.

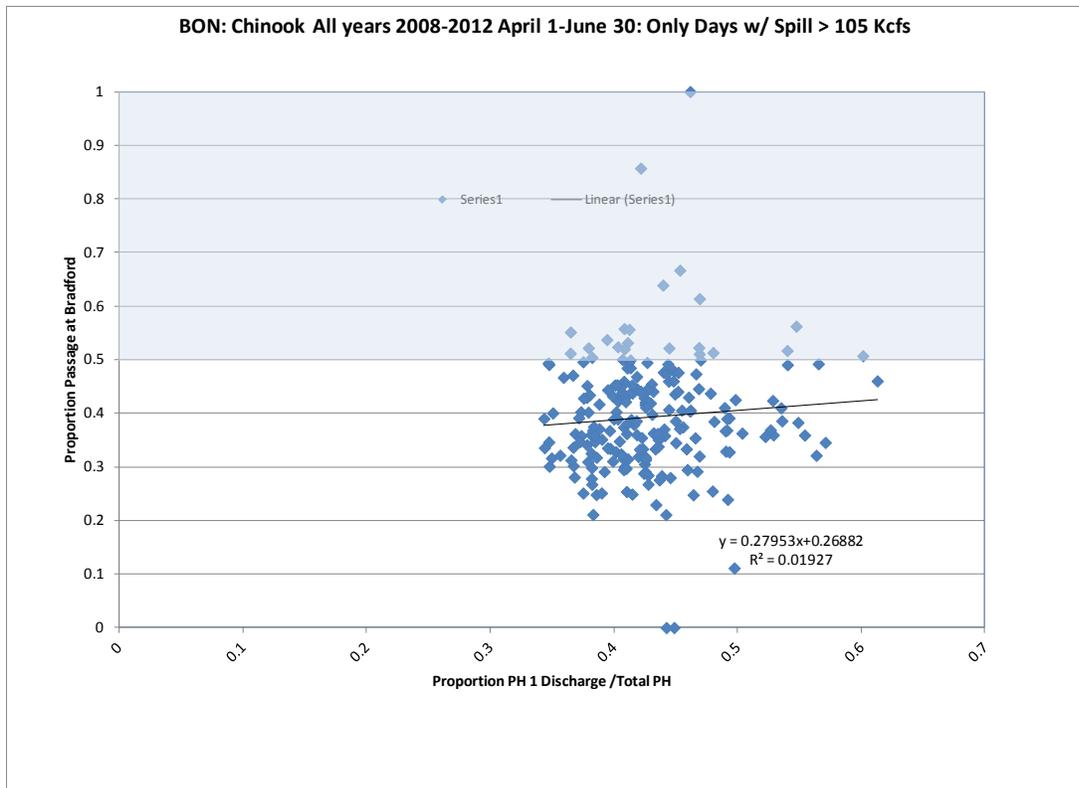


Figure 11. Relationship between the proportion of Chinook passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using only spring data (April through June) with Bonneville Spill levels above 105 Kcfs over the years 2008-2012 at Bonneville Dam.

Table 5. Chinook adults 2008 to 2012 proportion Bradford vs. proportion PH1 of Total PH, only days with spill levels between greater than 105 Kcfs. Weighted regression (inverse variance using theoretical binomial variance).

<b>Dependent Variable</b>	PROP_BRAD
<b>N</b>	206
<b>Multiple R</b>	0.13881
<b>Squared Multiple R</b>	0.01927
<b>Adjusted Squared Multiple R</b>	0.01446
<b>Standard Error of Estimate</b>	9.57204

Regression Coefficients  $B = (X'X)^{-1}X'Y$

Effect	Coefficient	Standard Error	Std. Coefficient	Tolerance	t	p-value
<b>CONSTANT</b>	0.27953	0.66939	0	.	0.41759	0.67669
<b>PROP_B1</b>	0.26882	0.13427	0.13881	1	2.00206	0.0466

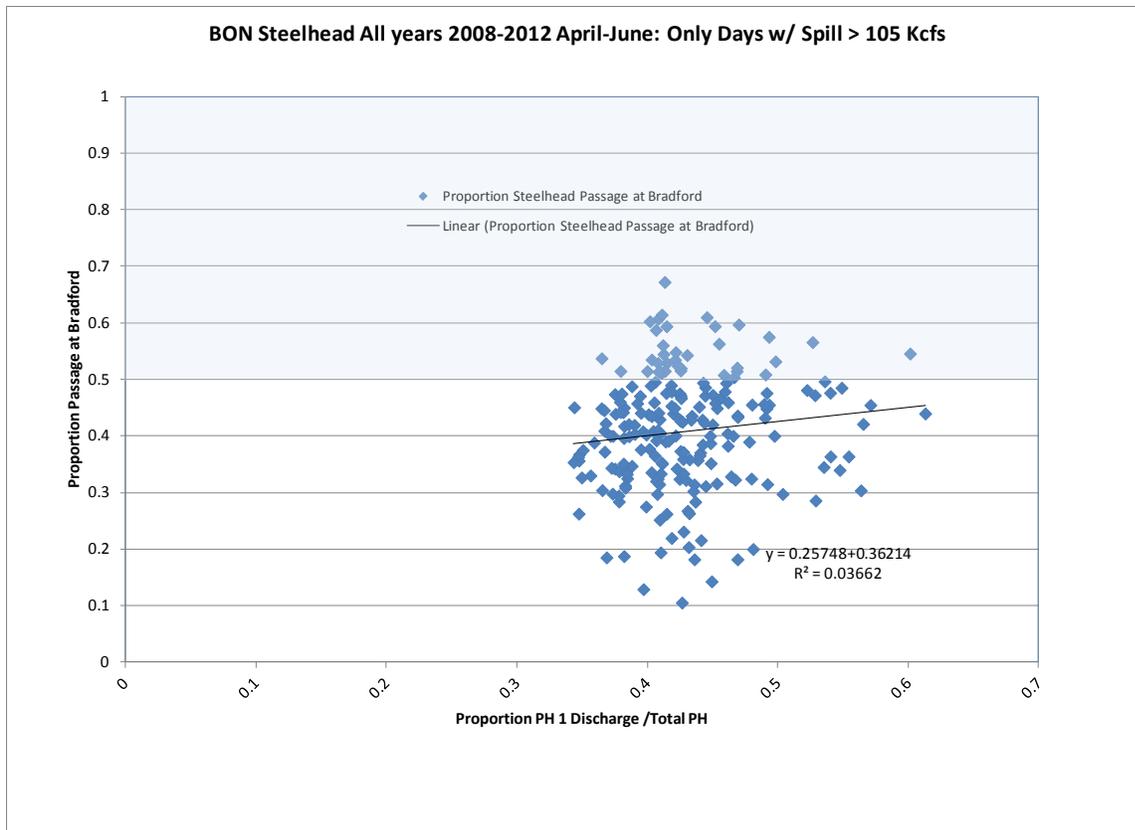


Figure 12. Relationship between the proportion of Steelhead passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) using only spring data (April through June) with Bonneville Spill levels above 105 Kcfs over the years 2008-2012 at Bonneville Dam.

Table 6. Steelhead adults 2008 to 2012 proportion Bradford vs. proportion PH1 of Total PH, only days with spill levels greater than 105 Kcfs. Weighted regression (inverse variance using theoretical binomial variance).

<b>Dependent Variable</b>	PROP_BRAD
<b>N</b>	210
<b>Multiple R</b>	0.19137
<b>Squared Multiple R</b>	0.03662
<b>Adjusted Squared Multiple R</b>	0.03199
<b>Standard Error of Estimate</b>	2.99125

Regression Coefficients  $B = (X'X)^{-1}X'Y$

Effect	Coefficient	Standard Error	Std. Coefficient	Tolerance	t	p-value
<b>CONSTANT</b>	0.25748	0.21391	0	.	1.2037	0.23007
<b>PROP_B1</b>	0.36214	0.12879	0.19137	1	2.81194	0.0054

Based on Figures 9-12 and Tables 3-6, the regressions that utilize Chinook and Steelhead individually for spill ranges between 95-105 Kcfs and greater than 105 Kcfs did not produce significant relationships between the proportion of fish passing the Bradford fishway and the proportion of powerhouse one discharge to total powerhouse discharge.

In summary, the proportion of powerhouse one discharge to total powerhouse discharge (PH1/PH total) did not clearly explain variations in salmonid ladder preference over the spring periods from 2008-2012. When the dataset was partitioned into Chinook and Steelhead individually and further divided into periods of daily spill between 95-105 Kcfs and days of spill above 105 Kcfs, weighted regressions were still not significant.

## Appendix C. Spring/Summer Chinook Adult to Juvenile Ratio Analysis.

Run of river spring/summer Chinook salmon juvenile bypass (JBS) mortality has been estimated to decline from 4% to .5% when Bonneville Powerhouse II (B2) turbine operations are reduced from the upper 1% to the midrange (Gilbreath 2012). Spring migrant performance test results indicated an average of 5.5% of juvenile spring Chinook migrate use the bypass system over the migration year (Ploskey et al. 2011 and Skalski et al. 2012). Using this proportion and the expected survival benefit, a juvenile concrete survival increase can be expected by limiting B2 turbines to the midrange. This change in juvenile survival is expressed with the following equation:

$$\Delta JuvS = BPE \left( S_{JBS}^{Middle1\%} - S_{JBS}^{Upper1\%} \right)$$

Where  $\Delta JuvS$  is the expected change in juvenile survival expressed as the product of the proportion of juvenile spring/summer Chinook passing the project traveling through the Bonneville Second Powerhouse bypass ( $BPE$ ) and the difference in expected survival between midrange and upper 1% operation ( $S_{JBS}^{Middle1\%} - S_{JBS}^{Upper1\%}$ ). A fish to flow ratio of 1:1 was assumed in this calculation. Based on these survival improvements and the proportion of juveniles using the bypass, a .2% increase in juvenile spring Chinook concrete survival is expected.

Bonneville Powerhouse 1 (B1) has been shown to have a higher fallback rate than the second powerhouse (B2). Any additional attraction to B1 can result in increased fallback and reduced survival for adults. Based on powerhouse limitations, de-rating B2 to midrange and increasing the operating range of B1 to best operating point is expected to increase the proportion of powerhouse flow going through B1. Based on empirical data, this increase in flow is not expected to increase adult attraction until uncontrolled spill (spill above the 100 kcfs Fish Operations Plan requirement) is necessary (FPC 2013, Figures 9-12). The increase in adult spring Chinook salmon migrating to B1 during uncontrolled spill as a result of increased flow at B1 is expressed with the following equation:

$$\Delta Adult\ B1_{passage} = \Delta B1_{flow} * Slope\ B1_{passage\ vs.\ B1_{flow}}$$

Where  $\Delta Adult\ B1_{passage}$  is the expected change in proportion of adult spring/summer Chinook passage at Bradford Island during uncontrolled spill expressed as a product of the expected change in proportion of powerhouse flow  $\Delta B1_{flow}$  and the linear historical response of spring Chinook proportion passage  $B1_{passage}$  at B1 (FPC 2013, Figure 11). Based on the historical relationship of proportion powerhouse flow at B1 and adult attraction, we estimate an additional 1.5% of total adult spring Chinook will migrate to B1 during uncontrolled spill.

Adult spring/summer Chinook adult fallback rates at B1 and B2 were estimated with PIT reascension data obtained from Dart (2012) and corrected for average fallback reascension rates from Keefer et al. (2005). Due to limited survival data, conversion rates to natal tributaries are used as a practical surrogate for adult survival. Conversion rates to natal tributaries for adult spring/summer Chinook fallbacks and non-fallbacks were obtained from Keefer et al. 2005. The change in adult conversion is estimated with the following equation.

$$\Delta \text{ Adult Conversion} = \frac{((B1_{prop.Upper1\%} (B1_{FBprop} * FB_{conv.}) + (B1_{NFBprop} * NFB_{conv.})) + (B2_{prop.Upper1\%} (B2_{FBprop} * FB_{conv.}) + (B2_{NFBprop} * NFB_{conv.})))}{((B1_{prop.mid1\%}(B1_{FBprop} * FB_{conv.}) + (B1_{NFBprop} * NFB_{conv.})) + (B2_{prop.mid1\%}(B2_{FBprop} * FB_{conv.}) + (B2_{NFBprop} * NFB_{conv.})))}$$

Where the change in adult conversion  $\Delta \text{ Adult Conversion}$  is a function of the change in adult passage proportion  $\Delta B_{xpassge}$ , the fallback rate  $B_{x_{FBprop}}$ , and conversion rates for fallback  $FB_{conv}$  and non-fallbacks  $NFB_{conv}$  at each powerhouse. Based on the change in proportion of adults migrating to B1, the increased fallback rate at B1, and the decreased survival of fallback fish, adult conversion is estimated to be reduced by .015% with B2 derated during uncontrolled spill.

To develop adult to juvenile trigger we adjust the adult survival change with the minimum spring/summer Chinook smolt to adult return rate observed in the last five years. To determine the ratio of adults to juveniles needed at the project for a relative improvement we use the following equation:

$$\Delta \text{ JuvS} / (\Delta \text{ Adult Conversion} / \text{SAR}) = \text{Adult/Juv.ratio}$$

Where the adult to juvenile trigger  $\text{Adult/Juv.ratio}$  needed during uncontrolled spill for a relative improvement is a function of the change in juvenile survival, the change in adult survival  $\Delta \text{ Adult Conversion}$ , and the minimum smolt to adult return rates  $\text{SAR}$ .

Based on this information, during uncontrolled spill, approximately 14 juveniles to every adult are needed for this operation to be a neutral impact. A conservative operation for adults would be to operate B2 to the midrange except when uncontrolled spill is occurring and juvenile spring/summer Chinook bypass collection counts are not expected to exceed total project spring/summer Chinook adult counts.

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**MEMORANDUM**

TO: Dave Statler, NPT  
Dave Wills, USFWS  
Charles Morrill, WDFW

*Michele DeHart*

FROM: Michele DeHart

DATE: June 7, 2012

RE: Juvenile Fish Mortality Estimates for Bonneville Second Powerhouse Bypass

In response to your request we have used the smolt monitoring information collected at the Bonneville PH2 bypass system to calculate the total mortality and descaling that has occurred in the juvenile salmon population passing through this bypass system thus far this year. The estimates were developed for the time period from March 2, 2012 to May 30, 2012 for the real-time project operations.

- A total of 52,496 juvenile salmonid mortalities occurred during the operation of the Bonneville PH2 juvenile bypass system through May 30, 2012. The passage through the PH2 juvenile bypass system represents a subset of the total mortality of juvenile salmonids that died as a result of passing Bonneville Dam.
- An additional total of 73,299 juvenile salmonids were descaled during the operation of the Bonneville PH2 juvenile bypass system through May 30, 2012. The expected mortality on these fish could be as high as 75%, converting to a loss of an additional 54,974 juvenile salmon.

- Based on average Bonneville to Bonneville smolt to adult returns collected since 2000, the juvenile mortalities at Bonneville PH2 convert to an expected loss of 1,106 adults and up to an additional 1,169 adults from the descaled juveniles using the 75% loss conversion estimate.
- To provide a relative perspective, this represents an equivalent percentage of the adult population passing through May 30<sup>th</sup> that was estimated to be removed by sea lions below Bonneville Dam in 2012.
- Although the action agencies routinely exceeded the FOP TDG criteria for the purpose of involuntary spill (lack of market or excess hydraulic capacity), the Action Agencies would not agree to additional voluntary spill to avoid powerhouse passage (to improve fish survival) during the Spring Creek National Fish Hatchery releases, or during passage of juvenile sockeye.
- Adopting a strategy of provision of additional spill for fish passage and decreasing the operation of the turbines at the powerhouse to the mid to low end of the 1% efficiency, could have improved juvenile survival, and adult return, by reducing the number of fish passing through the Bonneville PH2.

## **Background**

Some level of mortality and descaling occurs at every hydro-electric project bypass system. However, over the past years the mortality and descaling rates have been elevated at Bonneville PH2. The high juvenile mortality and descaling rates were first noted in 2008 after changes were made to the juvenile bypass system at PH2 to improve the proportion of fish passing through the system. A study conducted by Hughes et al. (2011) obtained information on velocity measurements near the screens. The study revealed approach velocities exceeding recommended criteria intended to improve fish passage conditions. The authors concluded that the turbulence in the gate well region in proximity to the VBS when PH2 was operated at the upper 1% efficiency range could be expected to result in suboptimal fish passage conditions. The high velocities and turbulent conditions could cause impingement, impact, or descaling of juvenile salmonids before they exit through the orifice into the juvenile fish bypass channel. In addition, the powerhouse turbine unit discharge rate directly affected the velocity distribution as well as the turbulence conditions in the gate well. Both the velocity and the turbulence increase as the operation within the 1% efficiency range increases. Results of this COE funded study revealed that the approach velocities in the gate wells exceeded criteria intended to improve fish passage conditions recommended by National Marine Fisheries Service and the Washington State Department of Fish and Wildlife.

Based on what is known about the hydraulic turbulence in the bypass of Bonneville PH2, the best condition for fish passage survival would be to operate PH2 at the low end of the 1% operating range. In 2012, the fishery agencies and tribes recognized the high flows this year and addressed the potential for mortality at Bonneville PH2, which increases as operation includes the upper range of the 1% efficiency, by requesting that the Action Agencies cap PH2 at the mid-point of the 1% best efficiency range. The Action Agencies would not implement the request because the operation would result in additional voluntary spill in excess of the involuntary spill that was already exceeding the gas cap. The Action Agencies implemented the following flow neutral operations that at times resulted in operation near the midpoint of the 1% efficiency, but

also included operating above the 50% range of the 1% and operating PH1 above the 1% efficiency range:

1. Bonneville (BON) PH2 units will be operated at the 25% of the 1% operating range;
2. To pass additional flows, operate powerhouse 1 (PH1) units up to the 100% (full capacity) of the 1% operating range;
3. To pass additional flows after PH1 is fully loaded, increase PH2 units one at a time in the order of priority within 25-50% of the 1% operating range;
4. To pass additional flow after PH1 is fully loaded and all available PH2 units are operating at 50%, increase operation of PH1 units up to best geometry;
5. To pass additional flow after all available PH1 units are operating at best geometry; increase PH2 units one at a time in the order of priority within 50-75% of the 1% operating range;
6. To pass additional flow after all available PH2 units are operating at 75%, decrease PH1 unit operation to 100% of the 1% operating range and increase PH2 units one at a time in the order of priority within 75-100% of the 1% operating range.

### **Juvenile Mortality and Descaling**

The mortality and descaling measurements described in this memo were obtained during the implementation of the Action Agencies recommended flow neutral operation of Bonneville Dam. The daily mortality estimates have ranged from 0% to 33%, and the descaling estimates have ranged from 0% to 25%.

Condition sampling occurs daily as part of the SMP sampling. The primary role of the condition monitoring is to identify the proportion of each species of migrant juvenile salmon that are descaled or have significant injuries indicative of problems in fish passage at dams such as debris in the fish bypass apparatus or mechanical issues. In the condition monitoring, a distinction is made between fish that are descaled and fish that are descaled with concurrent injuries or predator marks. While a fish that is descaled while passing through the bypass system can also display injuries or predation marks that are independent of its descaling, the distinction is made in the SMP condition monitoring to be conservative. In addition, effort is made to assure that only recent injury and descaling data are reported to eliminate descaling or injuries that were likely not to have occurred at the dam where the fish are being examined.

In order to determine the mortality that occurred by species for fish passing through the Bonneville PH2 bypass system, the daily sample was expanded by the daily sample rate to obtain a daily collection (number of fish passing Bonneville PH2 bypass). The daily collection was then multiplied by the daily sample mortality rate and the estimates were summed over the time period. (Daily collection, mortality and descaling data are available at [www.fpc.org](http://www.fpc.org)). Table 1 displays the total mortalities in the Bonneville Powerhouse 2 bypass collection when mortality rate from the sample was expanded to the total collection on a daily basis.

**Table 1.** Expanded juvenile fish mortalities at Bonneville Dam PH2 bypass in 2012.

<b>Species</b>	Average Percent Mortality	PH 2 Bypass Mortalities
<b>Chinook subyearling</b>	2.4%	18,221
<b>Chinook yearling</b>	1.9%	14,958
<b>Coho</b>	0.7%	1,028
<b>Sockeye</b>	7.2%	17,976
<b>Steelhead</b>	0.4%	313

A total of 52,496 juvenile salmon mortalities occurred in the Bonneville PH2 juvenile bypass system thus far in 2012.

Table 2 displays the total number of descaled fish that were estimated passing through the PH2 bypass system after the daily estimates were summed over the time period in the same way that mortalities were estimated. It is difficult to assess the impact of descaling on the future survival of juvenile salmonids. However, there is considerable evidence stating that descaling injuries have serious implications to stress related indicators and osmoregulatory ability (Congleton et al., 1998; Zydlewski et al., 2010). Evidence suggests that impairing the osmoregulatory performance during molting compromises the long-term survival of descaled smolts subsequently entering seawater.

Bouck and Smith (1979) concluded that the loss of scales during or immediately before a saltwater challenge is a very real threat to the life of a salmonid smolt. Removal of slime and scales from 25% of the body area of coho smolts caused no deaths in fresh water, but 75% mortality within 10 days in seawater. Since smolts at Bonneville will generally enter seawater within a few days of leaving the project, this 75% mortality estimate could be used to describe the potential mortality associated with this descaled population from Bonneville PH2 bypass system.

**Table 2.** Expanded juvenile fish descaled at Bonneville Dam PH2 bypass in 2012.

<b>Species</b>	Average Percent Descaled	PH 2 Bypass Descaled
<b>Chinook subyearling</b>	0.1%	686
<b>Chinook yearling</b>	4.3%	30,729
<b>Coho</b>	2.3%	2,053
<b>Sockeye</b>	15.2%	38,042
<b>Steelhead</b>	2.8%	1,789

Therefore, using the 75% mortality estimate and applying it to the total number of descaled fish yields the possibility that an estimated 54,974 additional juvenile salmonid mortalities could be attributed to the passage through the Bonneville PH2 bypass.

### Conversion to Adult Equivalents

The Bonneville to Bonneville smolt to adult return estimates were calculated for PIT tagged spring Chinook and steelhead smolts arriving at Bonneville dam for seven years between 2000 and 2009; with the exception of 2001, 2004 and 2005. These years were not included because: 1) there were relatively few detections of fish at BON in those years and, 2) the smolt hydrosystem experiences (i.e., number of bypass events) was higher in those years due to the elimination of spill. In these analyses, adult returns are all adults, including jacks. The SARs for wild and hatchery combined spring Chinook ranged from 1 to 4.1%, with an average of 2.1% and, for wild and hatchery combined steelhead the SARs ranged from 1.4 to 6.0%, with an average of 3.2%. (Table 3 and 4, Steve Haeseker, USFWS, personal communication).

**Table 3.** Estimated smolt to adult return rates for PIT tagged juvenile wild and hatchery Chinook detected at Bonneville Dam.

Wild and hatchery Chinook			
Year	Smolts	Adults	SAR
2000	10436	382	0.037
2002	15363	231	0.015
2003	15551	123	0.008
2006	8385	113	0.013
2007	17373	222	0.013
2008	8135	336	0.041
2009	15971	274	0.017
Average			0.021

**Table 4.** Estimated smolt to adult return rates for PIT tagged juvenile wild and hatchery Chinook detected at Bonneville Dam.

Wild and hatchery steelhead			
Year	Smolts	Adults	SAR
2000	2957	115	0.039
2002	3335	87	0.026
2003	3801	52	0.014
2006	1201	30	0.025
2007	2170	68	0.031
2008	11491	687	0.060
2009	16232	473	0.029
Average			0.032

For this analysis the average Chinook SAR was applied to yearling Chinook, subyearling Chinook, coho and sockeye and the combined steelhead SAR was applied to the juvenile population of steelhead. Table 5 shows the loss of fish in terms of adult equivalents that would be expected based on the juvenile mortality estimates at Bonneville PH2.

**Table 5.** Expanded juvenile fish mortalities to adult equivalents at Bonneville Dam PH2 bypass in 2012.

Species	Juvenile Mortalities	Adult Equivalents
<b>Subyearling Chinook</b>	18,221	383
<b>Yearling Chinook</b>	14,958	314
<b>Coho</b>	1,028	22
<b>Sockeye</b>	17,976	377
<b>Steelhead</b>	313	10
<b>Total</b>		<b>1,106</b>

A total of 1106 adult equivalents could be lost from the returning adult population to Bonneville Dam of spring/summer and fall Chinook, coho, sockeye and steelhead combined based on the juvenile mortalities at this project through May 30, 2012. The impact of juvenile

passage at Bonneville PH2 bypass system will have the greatest impact on the returning adult populations of Chinook and sockeye.

Table 6 shows the loss of fish in terms of adult equivalents that would be expected based on the juvenile descaling estimates at Bonneville PH2 bypass system, with a conversion rate of 75% mortalities based on Bouck and Smith (1979). The same average smolt to adult conversion rates were then applied to the juvenile mortalities to yields the adult equivalents.

**Table 6.** The number juvenile fish descaled expanded to adult equivalents at Bonneville Dam PH2 bypass in 2012, using a 75% conversion of descaling to mortality.

<b>Species</b>	<b>Juvenile Mortalities</b>	<b>Adult Equivalents</b>
<b>Subyearling Chinook</b>	686	11
<b>Yearling Chinook</b>	30,729	484
<b>Coho</b>	2,053	32
<b>Sockeye</b>	38,042	599
<b>Steelhead</b>	1,789	43
<b>Total</b>		<b>1,169</b>

A total of 1,169 adult equivalents could be lost from the returning adult population to Bonneville Dam of spring/summer and fall Chinook, coho, sockeye and steelhead combined based on the juvenile descaling rates and projected mortalities at this project through May 30, 2012. The impact of juvenile passage at Bonneville PH2 bypass system will have the greatest impact on the returning adult populations of spring/summer Chinook and sockeye due to the high descaling rates on these populations.

To put the number of adult equivalents that will not return to Bonneville Dam based on the juvenile mortality data in 2012 from PH2 bypass system passage, we used the percentage of adult salmonids consumed by sea lions below Bonneville Dam in 2012. Although the data are still preliminary the *Columbia Basin Bulletin (June 1, 2012)*, reports that it appears the overall predation expanded estimate will be about 1.3 percent of the January 1 through May 31 salmonid run. The expected final adjusted estimate (for unidentified prey and night time predation) will be slightly higher. While the juvenile salmon represents more species, if we were for illustrative purposes to take the total number of adult equivalents from both mortalities and descaling (2,275) at the Bonneville PH2 juvenile bypass system and divide it to the total number of salmonid adults that have passed Bonneville Dam through May 30<sup>th</sup> (169,219) it would also equal 1.3% of the 2012 adult salmon run to May 30, 2012.

## Total Dissolved Gas Effects

You also requested that we attempt to quantify what the change in total dissolved gas levels would have been if the COE did not reject the recommendation based on the need to provide a flow neutral implementation of operations. You also asked if we could translate those effects into estimated juvenile mortalities that might have occurred from such an operation of increased spill levels. It is difficult to estimate the exact change in flow that would have had to be added to spill in order to operate PH2 at the middle and lower end of the 1% efficiency range, since it is dependent on the project head (the difference in elevation between the forebay and tailwater). A lower head characterizes the condition when there is high flow through the project and at a lower head; it requires that less water be spilled. We chose to do the analysis based on the information shared by the COE at the Technical Management Team call on May 30<sup>th</sup>, operating at the mid-point of the 50% range requires a reduction in flow of 25 Kcfs, while operating to the 25% of the 1% operating range reduces flow through the powerhouse by 36 Kcfs. These data are for a lower flow than occurred in late April to mid-May, but should mean that the analysis is very conservative.

The analysis used the Cascade Island tailrace gage to measure water quality compliance. We recognize that the COE uses both the Camas/Washougal and Cascade Island tailrace gage to measure compliance, however, neither the State of Oregon nor the State of Washington require the use of the Camas/Washougal gage. The use of the Camas/Washougal gage as mimicking the next downstream forebay is recognized as being problematic because other factors, such as temperature and biological processes that produce oxygen, affect the concentration of TDG at this gage. While reductions of spill upstream will decrease the TDG at this gage, the spill itself is not responsible for the excursions beyond 115%.

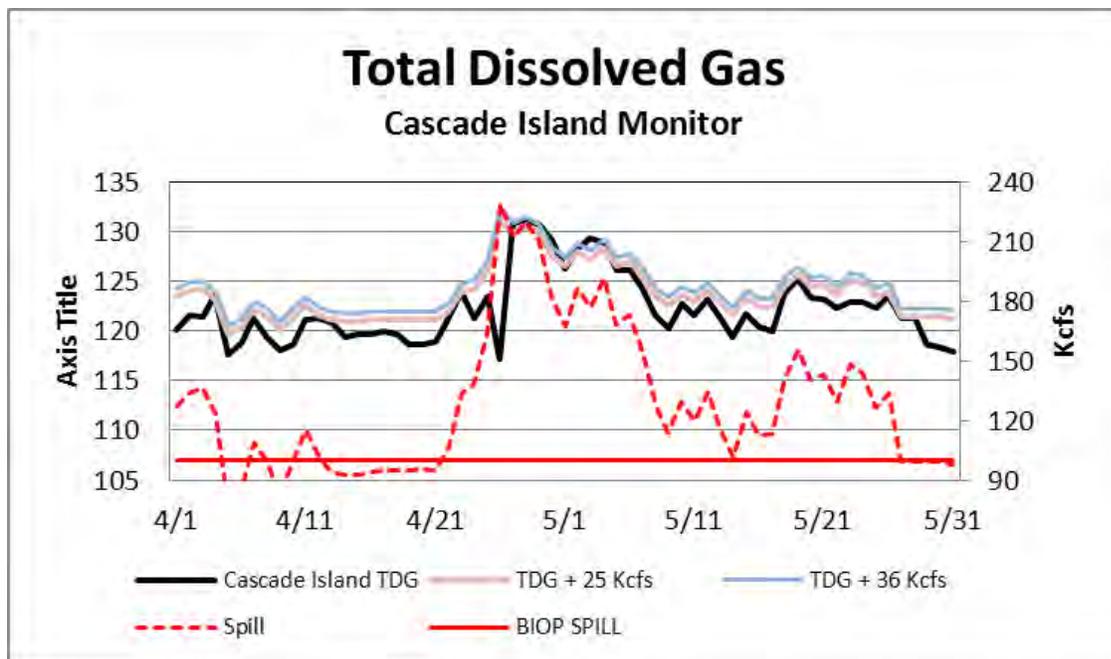
Using the data from 2012 through May 31<sup>st</sup> was developed an exponential regression model to predict the Cascade Island gage TDG from spill at Bonneville Dam. The Cascade gage has not been operational for most of the time period considered this year, but the COE is providing estimated modeled TDG. Using the COE data we developed the following equation ( $R^2 = 0.65$ ):

$$TDG = 112.71e^{(0.0005 * BonSpill)}$$

The actual and predicted TDG under the various operations are shown in Table 7. As can be observed in Table 7 and in Figure 1 the majority of time spill at Bonneville was already in excess of the BIOP spill levels for most of the time period considered. The increases in spill of 25 and 36 Kcfs did cause the tailrace TDG to exceed the 120% level on more days in the 61 day period, but rarely did the TDG levels exceed the 125%. Again, these are conservative estimates and are based on the reductions stated by the COE on the May 30<sup>th</sup> TMT conference call. On average, the TDG increase was 1.4% at 25 Kcfs additional spill to 2.2% with an additional 36 Kcfs spill.

**Table 7.** Actual versus estimated spill and TDG for conditions that might have occurred if the Bonneville PH2 was operated at the mid or lower end of the 1% efficiency range.

Operation	Spill	TDG	Number of Days Cascade Island Gage Exceeded out of 61 Days:		
			120%	125%	130%
Actual	130.4 Kcfs Range: 74.6-229.1 Kcfs	122.3% Range: 117.1-131.2%	42	10	3
+ 25 Kcfs Spill	155.4 Kcfs Range: 99.6-254.1 Kcfs	123.8% Range: 119.7-131.3%	60	12	3
+36 Kcfs Spill	166.4 Kcfs Range: 110.6-265.1 Kcfs	124.6% Range: 120.4-132.1%	61	16	4



**Figure 1.** Actual spill compared to the Biological Opinion level of 100 Kcfs, and actual total dissolved gas concentrations compared to the modeled concentrations for two increased levels of spill.

The increased spill from the operation of Bonneville PH2 to the 25% or 50% of the 1% efficiency range would likely have caused no additional mortality to the juvenile fish population passing Bonneville Dam from gas bubble trauma. The gas bubble trauma monitoring program has demonstrated that few fish are observed with signs of GBT until TDG levels approach and are sustained for a period of time at levels above 130%. The operation as described above would

only have resulted in one additional day when the TDG at Cascade Island would have been above the 130% level, and we are most likely over-estimating the change in TDG because at these already high flows the additional spill would have been considerably less than the 25 or 36 Kcfs we modeled.

In summary, the operation of Bonneville PH2 as occurred in 2012 through May 30<sup>th</sup> imposed considerable mortality on juvenile fish passing through this bypass. It is likely that fish operations requested for operating this project at the low end of the 1% operating range would have reduced both the direct mortalities that occurred and the descaling levels, while likely imposing little or no additional mortality due to the levels of total dissolved gas that were predicted to occur with increased spill levels.

### References:

Bouck, Gerald and Stanley D. Smith. Mortality of Experimentally Descaled Smolts of Coho Salmon (*Oncorhynchus kisutch*) in Fresh and Salt Water Transactions of the American Fisheries Society **108**:67-69, 1979.

Congleton, James L., William J. LaVoie, Martin S. Fitzpatrick, Diane G. Elliott. 1998. Blood Chemistry and Performance Indices For Juvenile Chinook Salmon and Steelhead Descaled Experimentally and During Passage Through Fish Bypasses At Dams on the Snake River, Washington. <http://www-heb.pac.dfo-mpo.gc.ca/congress/1998/stress.pdf>

Hughes, James S., Z. Daniel Deng, Mark A. Weiland, Jayson J. Martinez and Yong Yuan, 2011. Water Velocity Measurements on a Vertical Barrier Screen at the Bonneville Dam Second Powerhouse. *Energies* **4**, 2038-2048.

Zydlewski, J.; Zydlewski, Gayle; and Danner, G. R., 2010. Descaling Injury Impairs the Osmoregulatory Ability of Atlantic Salmon Smolts Entering Seawater. Marine Science Faculty Scholarship. Paper 32.

## **TDG INSTANCE TYPES**

### **April 1 – April 30, 2013**

Instances of when TDG levels exceed state water quality standards are classified into “types” which are shown on Table 1. These types are regionally approved and have been used since 2003. The states have requested information on TDG instances which include:

1. Date and times of exceedance
2. Amount of exceedance in percent saturation
3. Explain reason for exceedance
4. Discuss steps taken to fix the problem.

Because TDG instances are events when state TDG standards are exceeded, it is necessary to describe the current legal arrangement of how the state water quality standards are being implemented by the USACE. The 2013 Fish Operations Plan Court Order requires the Corps to operate according to the 2006 fixed monitoring station (FMS) system, and the 2006 state water quality standards which is referred to as “Roll-Over”. Therefore, the Camas/Washougal FMS, and the Oregon high 12-hour average calculation method are used to manage spill.

During the spill for fish passage season from April through August the Washington Department of Ecology (WDOE) has issued a temporary %TDG Rule Adjustment to their current water quality standards and Oregon Department of Environmental Quality (ODEQ) issued a 5-year %TDG Waiver. The state water quality standards are calculated differently from one another, and also from the 2006 Roll-Over.

USACE is currently tracking and recording the current state water quality standards as follows.

Oregon: [http://www.nwd-wc.usace.army.mil/ftppub/water\\_quality/12hr/or/](http://www.nwd-wc.usace.army.mil/ftppub/water_quality/12hr/or/)

Washington: [http://www.nwd-wc.usace.army.mil/ftppub/water\\_quality/12hr/wa/](http://www.nwd-wc.usace.army.mil/ftppub/water_quality/12hr/wa/)

Combined - OR & WA: [http://www.nwd-wc.usace.army.mil/ftppub/water\\_quality/12hr/](http://www.nwd-wc.usace.army.mil/ftppub/water_quality/12hr/)

Table 2 provides the TDG instances according to the Oregon high 12-hour average calculation method that occurred in the April 2013 spill for fish passage season.

Table 1

<b>Types of Instance</b>	
<b>Type 1 Condition</b>	<b>TDG levels exceed the TDG standard due to exceeding powerhouse capacity at run-of-river projects resulting in spill above the BiOp fish spill levels. This condition type includes:</b>
	<ul style="list-style-type: none"> <li>• High runoff flows and flood control efforts.</li> <li>• BPA load requirements are lower than actual powerhouse capacity.</li> <li>• Involuntary spill at Mid Columbia River dams resulting in high TDG levels entering the lower Columbia River.</li> <li>• Involuntary spill at Snake River dams resulting in high TDG levels entering the lower Columbia River.</li> </ul>
<b>Type 1a Condition</b>	<b>Planned and unplanned outages of hydro power equipment including generation unit, intertie line, or powerhouse outages.</b>
<b>Type 2 Exceedance</b>	<b>TDG exceedances due to the operation or mechanical failure of non-generating equipment. This exceedance type includes:</b>
	<ul style="list-style-type: none"> <li>• Flow deflectors unable to function for TDG abatement with tailwater elevations above 19 - 26 feet at Bonneville Dam.</li> <li>• Spill gates stuck in open position or inadvertently left open.</li> <li>• Increased spill in a bulk spill operation to pass debris.</li> <li>• Communication errors, such as teletype were transmitted but change was not timely made or misinterpretation of intent of teletype by Project operator.</li> </ul>
<b>Type 2a Exceedance</b>	<b>Malfunctioning FMS gauge, resulting in fewer TDG or temperature measurements when setting TDG spill caps.</b>
<b>Type 3 Exceedance</b>	<b>TDG exceedances due to uncertainties when using best professional judgment, SYSTDG model and forecasts. This exceedance type includes:</b>
	<ul style="list-style-type: none"> <li>• Uncertainties when using best professional judgment to apply the spill guidance criteria, e.g., travel time, degassing, and spill patterns.</li> <li>• Uncertainties when using the SYSTDG model to predict the effects of various hydro system operations, temperature, degassing, and travel time.</li> <li>• Uncertainties when using forecasts for flows, temperature and wind.</li> <li>• Unanticipated sharp rise in water temperature (a 1.5 degree F. or greater change in a day).</li> <li>• Bulk spill pattern being used which generated more TDG than expected.</li> </ul>

Table 2  
Types of TDG Instances  
April 2013

DATE	Lower Granite	Lower Granite	Little Goose	Little Goose	Lower Monum.	Lower Monum.	Ice Harbor	Ice Harbor	Chief Joseph	Chief Joseph	McNary	McNary	John Day	John Day	The Dalles	The Dalles	Bonn	Bonn	Camas
	Forebay	Tailwater	Forebay	Tailwater	Forebay	Tailwater	Forebay	Tailwater	Forebay	Tailwater	Forebay	Tailwater	Forebay	Tailwater	Forebay	Tailwater	Forebay	Tailwater	Forebay
4/1/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/2/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/3/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/4/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/5/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/6/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/7/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/8/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/9/2013	---	---	---	---	---	---	---	---	---	---	---	3.0	---	---	---	---	---	---	---
4/10/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/11/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/12/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3.0	---
4/13/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/14/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/15/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/16/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/17/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/18/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/19/2013	---	---	---	---	---	---	3.0	---	---	---	---	---	---	---	---	---	---	---	---
4/20/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/21/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/22/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4/23/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3.0	---	3.0
4/24/2013	---	---	---	---	---	3.0	3.0	---	---	---	---	---	---	---	---	---	3.0	---	2.0
4/25/2013	---	---	---	---	---	---	3.0	---	---	---	---	---	---	---	---	---	3.0	---	3.0
4/26/2013	---	---	---	---	---	---	3.0	---	---	---	---	---	---	---	---	---	---	---	3.0
4/27/2013	---	---	---	---	---	---	3.0	---	---	---	---	---	---	---	---	---	---	---	3.0
4/28/2013	---	---	---	---	---	---	3.0	---	---	---	---	---	---	---	---	---	---	---	---
4/29/2013	---	---	---	---	---	---	3.0	---	---	---	---	---	---	---	---	---	---	---	---
4/30/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
<b>Totals</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>5</b>

Grand Total = 18

# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Domingue  
**OR:** Erick Van Dyke  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

Wednesday June 5, 2013 9:00am - 12:00pm

1125 N.W. Couch Street, Suite 500, Columbia Room  
Portland, Oregon 97209-4142  
Map Quest [\[Directions\]](#)

**TMT MEETING**  
Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 5274

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnmv.net](mailto:rgumpert@cnmv.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

## AGENDA

1. Welcome and Introductions
2. Review May 29 Meeting Minutes
3. Bonneville Dam Operations - Doug Baus, COE-NWD
  - a. [Current Operations Data](#)
  - b. [Descaling Data](#)
  - c. [Mortality](#)
4. Dworshak Operations - Steve Hall, COE-NWW
5. Lower Monumental Dam Spring to Summer - Doug Baus, COE-NWD

6. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
7. Other
  - a. Set agenda and date for next meeting - **June 12, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Doug Baus](#) at (503) 808-3995*

1		NPD RESERVOIR CONTROL CENTER HOURLY OPERATION DATA REPORT					PROJECT- BON BONNEVILLE DAM Tuesday June 4, 2013					
GROSS GEN MW	STA USE MW	----- -- IN KCFS TOTAL	OUTFLOW POWER	----- -- SPILL	EL AT POWERHOUSE IN FEET + MSL FOREBAY TAILWATR	AVG HEAD FT	SUPR CAP MW	UNIT ON RMT	STATUS ON LINE AVL	PROJECT FOREBAY ELEV	STEVENSON GAGE ELEV	PROJECT TAILWATER ELEV
	4	262.90	151.10	99.40	74.60 20.80	53.80				74.50	76.00	20.30
	4	263.90	152.40	99.10	74.50 20.50	54.00				74.30	75.70	20.30
	4	254.50	143.00	99.10	74.50 20.30	54.20				74.40	75.70	20.00
	4	246.00	134.50	99.10	74.50 19.80	54.70				74.40	75.60	19.70
	4	246.00	134.60	99.00	74.20 19.20	55.00				74.10	75.50	19.70
	4	247.80	135.90	99.50	74.00 20.00	54.00				73.90	75.30	19.80
	4	250.10	138.40	99.30	74.00 20.00	54.00				73.90	75.20	19.80
	4	242.70	130.90	99.40	74.10 19.70	54.40				74.00	75.20	19.50
	4	240.60	128.80	99.40	74.20 19.50	54.70				74.00	75.30	19.40
	4	239.40	127.70	99.30	74.10 19.50	54.60				74.10	75.20	19.40
	4	238.50	127.00	99.10	74.10 19.50	54.60				74.00	75.20	19.30
	4	237.60	126.30	98.90	74.10 19.40	54.70				73.90	75.10	19.20
	4	239.00	127.00	99.60	73.90 19.50	54.40				73.90	75.00	19.30
	4	239.00	127.00	99.60	73.90 19.30	54.60				73.90	75.00	19.20
	4	238.60	126.60	99.60	74.00 19.30	54.70				73.90	75.10	19.10
	4	237.70	125.70	99.60	74.00 19.20	54.80				74.00	75.10	19.10
	4	237.70	125.70	99.60	73.70 19.20	54.50				74.00	75.20	19.10
	4	238.10	126.10	99.60	74.00 19.20	54.80				74.00	75.20	19.10
	4	238.00	125.90	99.70	74.20 19.10	55.10				74.10	75.30	19.10
	4	238.50	126.30	99.80	74.10 19.30	54.80				74.20	75.40	19.10
	4	252.00	139.70	99.90	74.20 19.80	54.40				74.20	75.50	19.60
	4	253.50	141.00	100.10	74.30 19.80	54.50				74.30	75.60	19.60
	4	255.40	142.80	100.20	74.40 20.00	54.40				74.30	75.70	19.70
	4	251.00	139.30	99.30	74.60 19.90	54.70				74.60	75.80	19.50
TOT	96											
AVG	4	245.35	133.49	99.47	74.17 19.66	54.52				74.12	75.37	19.50
MAX		263.90	152.40	100.20	74.60 20.80	55.10				74.60	76.00	20.30
MIN		237.60	125.70	98.90	73.70 19.10	53.80				73.90	75.00	19.10

1		NPD RESERVOIR CONTROL CENTER HOURLY OPERATION DATA REPORT					PROJECT- BON BONNEVILLE DAM & LAKE Tuesday June 4, 2013					
----- BONNEVILLE PH 1 -----					----- BONNEVILLE PH 2 -----					--- PROJECT ---		
GROSS GEN MW	POWER FLOW KCFS	UNIT ON RMT	STATUS ON LINE	PH 1 FOREBAY EL FT	PROJECT FOREBAY EL FT	GROSS GEN MW	POWER FLOW KCFS	UNIT ON RMT	STATUS ON LINE	AVL	SPWY GATES IN USE	MISC FLOW KCFS
	66.10			74.6	74.5		85.00				18	12.4
	67.50			74.5	74.3		84.90				18	12.4
	58.50			74.5	74.4		84.50				18	12.4
	50.40			74.5	74.4		84.10				18	12.4
	50.30			74.2	74.1		84.30				18	12.4
	49.00			74.0	73.9		86.90				18	12.4
	51.10			74.0	73.9		87.30				18	12.4
	43.70			74.1	74.0		87.20				18	12.4
	40.10			74.2	74.0		88.70				18	12.4
	39.30			74.1	74.1		88.40				18	12.4

11	38.30	74.1	74.0	88.70	18	12.4
12	37.80	74.1	73.9	88.50	18	12.4
13	38.10	73.9	73.9	88.90	18	12.4
14	38.10	73.9	73.9	88.90	18	12.4
15	37.70	74.0	73.9	88.90	18	12.4
16	37.20	74.0	74.0	88.50	18	12.4
17	37.20	73.7	74.0	88.50	18	12.4
18	37.50	74.0	74.0	88.60	18	12.4
19	37.90	74.2	74.1	88.00	18	12.4
20	38.30	74.1	74.2	88.00	18	12.4
21	50.80	74.2	74.2	88.90	18	12.4
22	52.40	74.3	74.3	88.60	18	12.4
23	54.10	74.4	74.3	88.70	18	12.4
24	51.10	74.6	74.6	88.20	18	12.4
TOT	1102.50					297.6
AVG	45.94	74.2	74.1	87.55	18	12.4
MAX	67.50	74.6	74.6	88.90	18	12.4
MIN	37.20	73.7	73.9	84.10	18	12.4

1		NPD RESERVOIR CONTROL CENTER HOURLY OPERATION DATA REPORT				PROJECT- BON BONNEVILLE DAM Wednesday June 5, 2013							
GROSS GEN MW	STA USE MW	----- TOTAL	OUTFLOW -- IN KCFS POWER	----- SPILL	EL AT POWERHOUSE IN FEET + MSL FOREBAY TAILWATR	AVG HEAD FT	SUPR CAP MW	UNIT ON RMT	STATUS ON LINE	AVL	PROJECT FOREBAY ELEV	STEVENSON GAGE ELEV	PROJECT TAILWATER ELEV
1	4	242.60	130.70	99.50	74.80	19.40	55.40				74.70	75.80	19.20
2	4	237.40	125.50	99.50	74.80	19.10	55.70				74.70	76.00	19.00
3	4	231.90	119.90	99.60	74.80	18.80	56.00				74.70	75.80	18.80
4	4	230.90	119.10	99.40	74.60	18.80	55.80				74.50	75.60	18.70
5	4	231.60	119.90	99.30	74.60	18.90	55.70				74.40	75.50	18.70
6	4	233.50	121.90	99.20	74.40	19.00	55.40				74.30	75.40	18.80
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													

TOT	24												
AVG	4	234.65	122.83	99.42	74.67	19.00	55.67				74.55	75.68	18.87
MAX		242.60	130.70	99.60	74.80	19.40	56.00				74.70	76.00	19.20
MIN		230.90	119.10	99.20	74.40	18.80	55.40				74.30	75.40	18.70

1		NPD RESERVOIR CONTROL CENTER HOURLY OPERATION DATA REPORT				PROJECT- BON BONNEVILLE DAM & LAKE Wednesday June 5, 2013							
		----- BONNEVILLE PH 1 -----				----- BONNEVILLE PH 2 -----				--- PROJECT ---			
GROSS GEN MW	POWER FLOW KCFS	UNIT ON RMT	STATUS ON LINE	AVL	PH 1 FOREBAY EL FT	PROJECT FOREBAY EL FT	GROSS GEN MW	POWER FLOW KCFS	UNIT ON RMT	STATUS ON LINE	AVL	SPWY GATES IN USE	MISC FLOW KCFS
1	44.70				74.8	74.7		86.00				18	12.4
2	40.30				74.8	74.7		85.20				18	12.4
3	34.50				74.8	74.7		85.40				18	12.4
4	33.40				74.6	74.5		85.70				18	12.4
5	33.00				74.6	74.4		86.90				18	12.4
6	33.80				74.4	74.3		88.10				18	12.4
7													
8													
9													
10													

11  
 12  
 13  
 14  
 15  
 16  
 17  
 18  
 19  
 20  
 21  
 22  
 23  
 24

TOT	219.70						74.4
AVG	36.62	74.7	74.5	86.22		18	12.4
MAX	44.70	74.8	74.7	88.10		18	12.4
MIN	33.00	74.4	74.3	85.20		18	12.4

FISH PASSAGE CENTER

Report ran on:

6/4/13 7:56 AM

<b>LAST TWO WEEKS PERCENT DESCALING BY SPECIES</b>
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<b>COMBINED YEARLING CHINOOK</b>
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Date	WTB		IMN		GRN		LEW	
	Number Examined	Percent Descaled						
5/21/2013			* 18	0.000	* 13	0.000		
5/22/2013			* 3	0.000				
5/23/2013			* 16	0.000				
5/24/2013			* 8	0.000				
5/25/2013			* 9	0.000				
5/26/2013			* 4	0.000				
5/27/2013			* 10	0.000				
5/28/2013			* 4	0.000				
5/29/2013			* 13	0.000				
5/30/2013			23	0.000				
5/31/2013								
6/1/2013								
6/2/2013								
6/3/2013								
<b>YTD:</b>	12425	0.531	37881	0.008	26210	1.099	1530	0.654

<b>COMBINED YEARLING CHINOOK (contd.)</b>
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Date	LGR		LGS		LMN		RIS	
	Number Examined	Percent Descaled						
5/21/2013	93	7.530	55	3.640	* 16	0.000	470	0.000
5/22/2013	64	10.940	77	0.000	61	1.640	266	0.750
5/23/2013	69	5.800	85	1.180	34	0.000	283	0.000
5/24/2013	69	7.250	53	0.000	23	0.000	224	0.450
5/25/2013	50	2.000	25	0.000	* 5	0.000	201	0.000
5/26/2013	* 18	11.110	43	0.000	* 8	0.000	186	0.000
5/27/2013	65	3.080	32	0.000	59	8.470	164	0.000
5/28/2013	33	9.090	34	0.000	32	3.130	203	0.990
5/29/2013	151	4.640	90	1.110	59	1.690	350	0.000
5/30/2013	105	4.760	45	0.000	30	3.330	342	0.290
5/31/2013	123	0.000	106	0.000	49	2.040	312	0.320
6/1/2013	28	3.570	36	0.000	87	2.300	161	0.620
6/2/2013	23	0.000	26	0.000	81	1.230	148	0.000
6/3/2013	* 12	8.330	* 18	0.000	28	0.000	93	0.000
<b>YTD:</b>	21684	2.643	6208	0.789	5703	2.700	16452	0.286

COMBINED YEARLING CHINOOK (contd.)							
Date	MCN		JDA		BO2		
	Number Examined	Percent Descaled	Number Examined	Percent Descaled	Number Examined	Percent Descaled	
5/21/2013	119	3.360	115	1.140	128	3.910	
5/22/2013	*		117	4.690	192	3.650	
5/23/2013	*	57	175	5.170	44	0.000	
5/24/2013	*		179	5.560	81	1.230	
5/25/2013	*	156	132	4.110	89	4.490	
5/26/2013	*		95	1.710	119	3.360	
5/27/2013	*	115	96	0.000	100	5.000	
5/28/2013	*		201	0.000	97	2.060	
5/29/2013	*	261	228	0.000	156	1.920	
5/30/2013	*		178	0.770	106	2.830	
5/31/2013	*	587	188	1.430	88	1.140	
6/1/2013	*		232	5.190	64	4.690	
6/2/2013	*	308	139	1.810	116	5.170	
6/3/2013	*		243	0.000	90	5.560	
<b>YTD:</b>		7356	5.370	15589	2.021	11624	2.374

<b>LAST TWO WEEKS PERCENT DESCALING BY SPECIES</b>
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COMBINED SUBYEARLING CHINOOK								
Date	WTB		IMN		GRN		LEW	
	Number Examined	Percent Descaled						
5/21/2013								
5/22/2013								
5/23/2013								
5/24/2013								
5/25/2013								
5/26/2013								
5/27/2013								
5/28/2013								
5/29/2013								
5/30/2013								
5/31/2013								
6/1/2013								
6/2/2013								
6/3/2013								
<b>YTD:</b>			20	0.000	10	0.000		

COMBINED SUBYEARLING CHINOOK (contd.)								
Date	LGR		LGS		LMN		RIS	
	Number Examined	Percent Descaled						
5/21/2013	40	2.500	20	0.000	* 3	0.000		
5/22/2013	46	4.350	36	0.000	* 12	0.000		
5/23/2013	51	3.920	48	4.170	* 5	0.000		
5/24/2013	43	0.000	40	0.000	* 4	0.000	* 6	0.000
5/25/2013	149	0.670	40	0.000	* 4	0.000	* 1	0.000
5/26/2013	108	3.700	25	0.000			* 4	0.000
5/27/2013	193	2.590	29	0.000	30	0.000	* 4	0.000
5/28/2013	242	2.890	33	0.000	* 14	0.000	* 1	0.000
5/29/2013	767	2.870	92	0.000	33	0.000	* 13	0.000
5/30/2013	1457	4.600	130	0.000	32	0.000	* 15	0.000
5/31/2013	1087	3.590	534	0.370	91	0.000	27	0.000
6/1/2013	318	2.520	521	0.000	150	0.000	33	0.000
6/2/2013	668	1.200	370	0.270	245	0.410	41	0.000
6/3/2013	289	2.080	323	0.000	217	1.380	39	0.000
<b>YTD:</b>	<b>5557</b>	<b>3.095</b>	<b>2262</b>	<b>0.221</b>	<b>896</b>		<b>230</b>	<b>0.000</b>

COMBINED SUBYEARLING CHINOOK (contd.)						
Date	MCN		JDA		BO2	
	Number Examined	Percent Descaled	Number Examined	Percent Descaled	Number Examined	Percent Descaled
5/21/2013	* 1	0.000	* 2	0.000	* 19	0.000
5/22/2013			* 4	0.000	* 12	0.000
5/23/2013	* 4	0.000	* 8	0.000	* 14	0.000
5/24/2013			* 15	0.000	25	0.000
5/25/2013	* 3	0.000	* 12	0.000	23	0.000
5/26/2013			* 4	0.000	27	0.000
5/27/2013	* 8	0.000	* 13	0.000	24	0.000
5/28/2013			* 11	9.090	44	2.270
5/29/2013	* 15	0.000	20	0.000	62	4.840
5/30/2013			20	5.000	45	0.000
5/31/2013	24	4.170	* 15	0.000	41	0.000
6/1/2013			26	0.000	63	0.000
6/2/2013	20	0.000	* 13	0.000	66	0.000
6/3/2013			42	4.760	80	1.250
<b>YTD:</b>	<b>86</b>	<b>1.163</b>	<b>212</b>	<b>1.887</b>	<b>6827</b>	<b>0.132</b>

<b>LAST TWO WEEKS PERCENT DESCALING BY SPECIES</b>
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<b>COMBINED COHO</b>
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Date	WTB		IMN		GRN		LEW	
	Number Examined	Percent Descaled						
5/21/2013								
5/22/2013								
5/23/2013								
5/24/2013								
5/25/2013								
5/26/2013								
5/27/2013								
5/28/2013								
5/29/2013								
5/30/2013								
5/31/2013								
6/1/2013								
6/2/2013								
6/3/2013								
<b>YTD:</b>								

<b>COMBINED COHO (contd.)</b>
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Date	LGR		LGS		LMN		RIS	
	Number Examined	Percent Descaled						
5/21/2013	* 7	0.000	* 8	0.000			1232	0.080
5/22/2013	* 6	33.330	* 11	0.000	* 9	11.110	717	0.700
5/23/2013	* 4	0.000	* 13	0.000	* 1	0.000	1467	0.200
5/24/2013	* 1	0.000	* 6	0.000			931	0.210
5/25/2013	* 2	0.000	* 6	16.670			1166	0.260
5/26/2013	* 3	0.000					1160	0.600
5/27/2013	* 2	0.000	* 2	0.000	* 5	0.000	985	0.000
5/28/2013	* 3	0.000	* 2	0.000	* 1	0.000	1223	0.250
5/29/2013	* 4	0.000	* 11	0.000	* 3	0.000	1401	0.140
5/30/2013	* 5	20.000	* 8	0.000	* 12	0.000	916	0.110
5/31/2013	* 6	0.000	* 8	0.000	* 5	0.000	607	0.490
6/1/2013	* 2	0.000	23	0.000	* 6	0.000	427	0.230
6/2/2013	* 2	0.000	* 8	0.000	22	0.000	342	0.000
6/3/2013	* 1	0.000	* 4	0.000	* 8	0.000	204	0.490
<b>YTD:</b>	337	2.374	271	0.738	137	2.920	27424	0.335

COMBINED COHO (contd.)							
Date	MCN		JDA		BO2		
	Number Examined	Percent Descaled	Number Examined	Percent Descaled	Number Examined	Percent Descaled	
5/21/2013	*	11	0.000	29	0.000	73	4.110
5/22/2013				40	0.000	117	1.710
5/23/2013	*	8	12.500	88	2.270	37	0.000
5/24/2013				54	7.410	44	0.000
5/25/2013		20	0.000	23	4.350	37	0.000
5/26/2013				23	4.350	130	0.770
5/27/2013	*	13	7.690	26	0.000	70	1.430
5/28/2013				41	4.880	77	5.190
5/29/2013		47	0.000	45	2.220	166	1.810
5/30/2013				42	0.000	137	0.000
5/31/2013		72	2.780	35	5.710	140	0.710
6/1/2013				47	0.000	114	1.750
6/2/2013		37	5.410	27	3.700	200	1.000
6/3/2013				51	0.000	109	2.750
<b>YTD:</b>		418	3.349	1196	1.756	7076	1.003

<b>LAST TWO WEEKS PERCENT DESCALING BY SPECIES</b>
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COMBINED SOCKEYE								
Date	WTB		IMN		GRN		LEW	
	Number Examined	Percent Descaled						
5/21/2013								
5/22/2013								
5/23/2013								
5/24/2013								
5/25/2013								
5/26/2013								
5/27/2013								
5/28/2013								
5/29/2013								
5/30/2013								
5/31/2013								
6/1/2013								
6/2/2013								
6/3/2013								
<b>YTD:</b>								

COMBINED SOCKEYE (contd.)								
Date	LGR		LGS		LMN		RIS	
	Number Examined	Percent Descaled						
5/21/2013	* 12	25.000	* 9	0.000	* 2	0.000	291	1.370
5/22/2013	* 9	11.110	* 14	0.000	26	0.000	148	2.700
5/23/2013	* 2	50.000	* 18	0.000	* 10	0.000	227	2.640
5/24/2013	* 1	0.000	* 4	0.000	* 5	20.000	113	0.880
5/25/2013	* 2	0.000	* 4	0.000	* 3	0.000	80	1.250
5/26/2013			* 14	7.140			37	0.000
5/27/2013	* 2	50.000			* 9	0.000	* 14	0.000
5/28/2013	* 1	0.000	* 4	0.000	* 6	0.000	* 5	20.000
5/29/2013	* 2	0.000	* 9	11.110	* 2	0.000	* 11	0.000
5/30/2013	* 4	0.000	* 3	0.000	* 2	0.000	* 2	0.000
5/31/2013	* 4	0.000	* 3	0.000	* 5	0.000	* 3	0.000
6/1/2013	* 2	0.000	* 2	0.000	* 5	0.000	* 4	0.000
6/2/2013					* 7	0.000	* 5	0.000
6/3/2013	* 1	0.000			* 2	0.000	* 4	0.000
<b>YTD:</b>	269	4.461	178	1.124	139	2.158	14085	1.065

COMBINED SOCKEYE (contd.)						
Date	MCN		JDA		BO2	
	Number Examined	Percent Descaled	Number Examined	Percent Descaled	Number Examined	Percent Descaled
5/21/2013	146	4.110	51	7.840	106	7.550
5/22/2013			99	6.060	226	10.180
5/23/2013	70	15.710	139	3.600	56	3.570
5/24/2013			153	4.580	147	4.080
5/25/2013	61	9.840	69	7.250	104	14.420
5/26/2013			78	3.850	80	5.000
5/27/2013	61	14.750	63	6.350	71	8.450
5/28/2013			79	8.860	45	4.440
5/29/2013	95	17.890	88	7.950	67	4.480
5/30/2013			89	4.490	49	4.080
5/31/2013	94	15.960	57	1.750	35	2.860
6/1/2013			51	9.800	24	8.330
6/2/2013	46	8.700	38	10.530	* 16	0.000
6/3/2013			51	7.840	* 18	22.220
<b>YTD:</b>	2002	7.792	2293	5.277	1829	9.185

<b>LAST TWO WEEKS PERCENT DESCALING BY SPECIES</b>
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<b>COMBINED STEELHEAD</b>
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Date	WTB		IMN		GRN		LEW	
	Number Examined	Percent Descaled						
5/21/2013			173	0.000	22	0.000		
5/22/2013			105	0.000				
5/23/2013			175	0.000				
5/24/2013			76	0.000				
5/25/2013			65	0.000				
5/26/2013			33	0.000				
5/27/2013			39	0.000				
5/28/2013			* 19	0.000				
5/29/2013			56	1.790				
5/30/2013			35	0.000				
5/31/2013								
6/1/2013								
6/2/2013								
6/3/2013								
<b>YTD:</b>	2714	2.358	10037	0.309	3535	8.911	3984	2.134

<b>COMBINED STEELHEAD (contd.)</b>
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Date	LGR		LGS		LMN		RIS	
	Number Examined	Percent Descaled						
5/21/2013	246	5.280	98	1.020	66	1.520	271	0.370
5/22/2013	175	5.710	177	2.260	265	6.040	178	1.690
5/23/2013	115	3.480	150	2.670	55	0.000	274	1.090
5/24/2013	174	2.300	124	1.610	69	7.250	242	0.000
5/25/2013	181	4.420	105	2.860	34	2.940	270	0.000
5/26/2013	137	4.380	130	0.770	45	2.220	293	0.340
5/27/2013	354	3.390	146	0.000	276	2.540	366	0.270
5/28/2013	294	5.780	79	1.270	162	2.470	269	0.740
5/29/2013	399	4.510	427	0.700	212	3.300	148	2.700
5/30/2013	287	2.440	109	0.920	103	4.850	91	0.000
5/31/2013	159	3.140	162	0.000	71	5.630	71	0.000
6/1/2013	34	0.000	183	1.090	91	5.490	53	1.890
6/2/2013	111	2.700	101	0.990	72	1.390	59	0.000
6/3/2013	91	7.690	76	0.000	72	0.000	53	0.000
<b>YTD:</b>	17385	2.571	8261	0.569	6318	3.814	8362	0.395

COMBINED STEELHEAD (contd.)								
Date	MCN		JDA		BO2			
	Number Examined	Percent Descaled	Number Examined	Percent Descaled	Number Examined	Percent Descaled		
5/21/2013	*	18	11.110	61	3.280	38	2.630	
5/22/2013				68	1.470	26	0.000	
5/23/2013	*	10	0.000	64	0.000	20	0.000	
5/24/2013				52	3.850	*	14	0.000
5/25/2013	*	16	0.000	35	8.570	*	11	0.000
5/26/2013				30	0.000	*	19	0.000
5/27/2013	*	10	10.000	31	0.000	*	14	0.000
5/28/2013				48	4.170	*	17	0.000
5/29/2013		27	7.410	38	7.890		37	2.700
5/30/2013				42	9.520		24	0.000
5/31/2013		62	4.840	28	0.000		23	0.000
6/1/2013				78	7.690	*	17	0.000
6/2/2013		25	12.000	40	2.500		54	1.850
6/3/2013				74	5.410		52	1.920
<b>YTD:</b>		1855	5.445	5599	3.358		2848	2.212

\* Indicates that there were less than 20 fish examined.

## FISH PASSAGE CENTER WEEKLY MORTALITY REPORT

Last Updated: 6/4/2013 7:58

Lower Granite Dam						Little Goose Dam					
Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts	Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts
CH1*	5/28/2013	34	1	2.9%	0	CH1	5/28/2013	66	0	0.0%	0
	5/29/2013	183	0	0.0%	0		5/29/2013	90	0	0.0%	0
	5/30/2013	105	0	0.0%	0		5/30/2013	45	0	0.0%	3
	5/31/2013	123	0	0.0%	1		5/31/2013	107	1	0.9%	1
	6/1/2013	28	0	0.0%	0		6/1/2013	36	0	0.0%	0
	6/2/2013	24	1	4.2%	0		6/2/2013	26	0	0.0%	0
	6/3/2013	28	16	57.1%	0		6/3/2013	18	0	0.0%	0
ST	5/28/2013	294	0	0.0%	0	ST	5/28/2013	126	0	0.0%	0
	5/29/2013	411	0	0.0%	0		5/29/2013	427	0	0.0%	0
	5/30/2013	287	0	0.0%	1		5/30/2013	110	1	0.9%	2
	5/31/2013	159	0	0.0%	1		5/31/2013	162	0	0.0%	0
	6/1/2013	34	0	0.0%	1		6/1/2013	183	0	0.0%	1
	6/2/2013	112	1	0.9%	0		6/2/2013	102	1	1.0%	1
	6/3/2013	96	5	5.2%	0		6/3/2013	76	0	0.0%	1
CO	5/28/2013	3	0	0.0%	0	CO	5/28/2013	2	0	0.0%	0
	5/29/2013	4	0	0.0%	1		5/29/2013	11	0	0.0%	0
	5/30/2013	5	0	0.0%	0		5/30/2013	8	0	0.0%	0
	5/31/2013	6	0	0.0%	0		5/31/2013	8	0	0.0%	0
	6/1/2013	2	0	0.0%	0		6/1/2013	23	0	0.0%	0
	6/2/2013	2	0	0.0%	0		6/2/2013	8	0	0.0%	0
	6/3/2013	3	2	66.7%	0		6/3/2013	4	0	0.0%	0
SO	5/28/2013	1	0	0.0%	0	SO	5/28/2013	4	0	0.0%	0
	5/29/2013	2	0	0.0%	1		5/29/2013	9	0	0.0%	0
	5/30/2013	4	0	0.0%	0		5/30/2013	3	0	0.0%	0
	5/31/2013	4	0	0.0%	0		5/31/2013	3	0	0.0%	0
	6/1/2013	2	0	0.0%	0		6/1/2013	2	0	0.0%	0
	6/2/2013						6/2/2013				
	6/3/2013	2	1	50.0%	0		6/3/2013				

CH0*	5/28/2013	247	1	0.4%	1	CH0	5/28/2013	35	0	0.0%	0
	5/29/2013	780	9	1.2%	42		5/29/2013	98	3	3.1%	0
	5/30/2013	1473	4	0.3%	7		5/30/2013	135	2	1.5%	0
	5/31/2013	1118	25	2.2%	12		5/31/2013	537	0	0.0%	0
	6/1/2013	319	0	0.0%	12		6/1/2013	521	0	0.0%	3
	6/2/2013	674	4	0.6%	8		6/2/2013	371	0	0.0%	3
	6/3/2013	545	256	47.0%	3		6/3/2013	324	0	0.0%	2
Lamprey	5/28/2013					Lamprey	5/28/2013	1	0	0.0%	0
Juveniles	5/29/2013	2	0	0.0%	0	Juveniles	5/29/2013				
	5/30/2013	1	0	0.0%	0		5/30/2013	1	0	0.0%	0
	5/31/2013						5/31/2013	2	0	0.0%	0
	6/1/2013						6/1/2013	3	1	33.3%	0
	6/2/2013						6/2/2013	5	1	20.0%	0
	6/3/2013						6/3/2013				

\* Inflated mortality on 6/3/2013 due to fish stuck in sample tank divider screen over several days. Cannot distinguish when fish died. Screen has been repaired.

Lower Monumental Dam						McNary Dam					
Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts	Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts
CH1	5/28/2013	32	0	0.0%	0	CH1	5/28/2013				
	5/29/2013	60	1	1.7%	0		5/29/2013	262	1	0.4%	4
	5/30/2013	30	0	0.0%	0		5/30/2013				
	5/31/2013	49	0	0.0%	0		5/31/2013	679	3	0.4%	1
	6/1/2013	87	0	0.0%	0		6/1/2013				
	6/2/2013	81	0	0.0%	0		6/2/2013	309	1	0.3%	6
	6/3/2013	29	1	3.4%	0		6/3/2013				
ST	5/28/2013	162	0	0.0%	1	ST	5/28/2013				
	5/29/2013	212	0	0.0%	0		5/29/2013	27	0	0.0%	1
	5/30/2013	104	1	1.0%	1		5/30/2013				
	5/31/2013	71	0	0.0%	0		5/31/2013	74	1	1.4%	0
	6/1/2013	91	0	0.0%	1		6/1/2013				
	6/2/2013	72	0	0.0%	0		6/2/2013	25	0	0.0%	0
	6/3/2013	72	0	0.0%	0		6/3/2013				
CO	5/28/2013	1	0	0.0%	0	CO	5/28/2013				

	5/29/2013	3	0	0.0%	0		5/29/2013	47	0	0.0%	0
	5/30/2013	12	0	0.0%	0		5/30/2013				
	5/31/2013	5	0	0.0%	0		5/31/2013	72	0	0.0%	0
	6/1/2013	6	0	0.0%	0		6/1/2013				
	6/2/2013	22	0	0.0%	0		6/2/2013	37	0	0.0%	0
	6/3/2013	8	0	0.0%	0		6/3/2013				
SO	5/28/2013	6	0	0.0%	0	SO	5/28/2013				
	5/29/2013	2	0	0.0%	0		5/29/2013	96	1	1.0%	7
	5/30/2013	2	0	0.0%	0		5/30/2013				
	5/31/2013	5	0	0.0%	0		5/31/2013	96	2	2.1%	1
	6/1/2013	5	0	0.0%	0		6/1/2013				
	6/2/2013	7	0	0.0%	0		6/2/2013	46	0	0.0%	1
	6/3/2013	2	0	0.0%	0		6/3/2013				
CHO	5/28/2013	14	0	0.0%	0	CHO	5/28/2013				
	5/29/2013	36	0	0.0%	0		5/29/2013	15	0	0.0%	0
	5/30/2013	33	0	0.0%	2		5/30/2013				
	5/31/2013	92	0	0.0%	0		5/31/2013	25	0	0.0%	0
	6/1/2013	155	0	0.0%	1		6/1/2013				
	6/2/2013	251	0	0.0%	1		6/2/2013	21	0	0.0%	0
	6/3/2013	221	0	0.0%	0		6/3/2013				
Lamprey	5/28/2013	3	0	0.0%	0	Lamprey	5/28/2013				
Juveniles	5/29/2013	2	0	0.0%	0	Juveniles	5/29/2013	26	0	0.0%	0
	5/30/2013	1	0	0.0%	0		5/30/2013				
	5/31/2013	3	0	0.0%	0		5/31/2013	17	1	5.9%	0
	6/1/2013	5	0	0.0%	0		6/1/2013				
	6/2/2013	2	0	0.0%	0		6/2/2013	24	1	4.2%	0
	6/3/2013	6	0	0.0%	0		6/3/2013				

John Day Dam						Bonneville Dam					
Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts	Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts
CH1	5/28/2013	201	0	0.0%	0	CH1	5/28/2013	97	0	0.0%	0
	5/29/2013	229	1	0.4%	0		5/29/2013	157	1	0.6%	0
	5/30/2013	179	1	0.6%	0		5/30/2013	106	0	0.0%	0
	5/31/2013	191	3	1.6%	0		5/31/2013	88	0	0.0%	0
	6/1/2013	234	2	0.9%	0		6/1/2013	64	0	0.0%	0
	6/2/2013	140	1	0.7%	0		6/2/2013	116	0	0.0%	0
	6/3/2013	244	1	0.4%	0		6/3/2013	90	0	0.0%	0
ST	5/28/2013	49	1	2.0%	0	ST	5/28/2013	17	0	0.0%	0
	5/29/2013	38	0	0.0%	0		5/29/2013	37	0	0.0%	0
	5/30/2013	42	0	0.0%	0		5/30/2013	24	0	0.0%	0
	5/31/2013	28	0	0.0%	0		5/31/2013	23	0	0.0%	0
	6/1/2013	78	0	0.0%	0		6/1/2013	17	0	0.0%	0
	6/2/2013	41	1	2.4%	0		6/2/2013	54	0	0.0%	0
	6/3/2013	74	0	0.0%	0		6/3/2013	52	0	0.0%	0
CO	5/28/2013	42	1	2.4%	0	CO	5/28/2013	77	0	0.0%	0
	5/29/2013	45	0	0.0%	0		5/29/2013	167	1	0.6%	0
	5/30/2013	43	1	2.3%	0		5/30/2013	137	0	0.0%	0
	5/31/2013	35	0	0.0%	0		5/31/2013	141	1	0.7%	0
	6/1/2013	47	0	0.0%	0		6/1/2013	114	0	0.0%	0
	6/2/2013	27	0	0.0%	0		6/2/2013	200	0	0.0%	0
	6/3/2013	52	1	1.9%	0		6/3/2013	110	1	0.9%	0
SO	5/28/2013	80	1	1.3%	0	SO	5/28/2013	45	0	0.0%	0
	5/29/2013	89	1	1.1%	0		5/29/2013	67	0	0.0%	0
	5/30/2013	89	0	0.0%	0		5/30/2013	49	0	0.0%	0
	5/31/2013	57	0	0.0%	0		5/31/2013	36	1	2.8%	0
	6/1/2013	51	0	0.0%	0		6/1/2013	25	1	4.0%	0
	6/2/2013	38	0	0.0%	0		6/2/2013	16	0	0.0%	0
	6/3/2013	52	1	1.9%	0		6/3/2013	18	0	0.0%	0
CH0	5/28/2013	11	0	0.0%	0	CH0	5/28/2013	47	2	4.3%	0
	5/29/2013	20	0	0.0%	0		5/29/2013	70	4	5.7%	0
	5/30/2013	20	0	0.0%	0		5/30/2013	50	2	4.0%	0

	5/31/2013	16	1	6.3%	0		5/31/2013	44	1	2.3%	0
	6/1/2013	27	0	0.0%	0		6/1/2013	63	0	0.0%	0
	6/2/2013	13	0	0.0%	0		6/2/2013	69	1	1.4%	0
	6/3/2013	42	0	0.0%	0		6/3/2013	83	3	3.6%	0
Lamprey	5/28/2013	86	0	0.0%	0	Lamprey	5/28/2013	3	0	0.0%	0
Juveniles	5/29/2013	76	0	0.0%	0	Juveniles	5/29/2013	1	0	0.0%	0
	5/30/2013	81	0	0.0%	0		5/30/2013	1	0	0.0%	0
	5/31/2013	81	0	0.0%	0		5/31/2013	1	0	0.0%	0
	6/1/2013	63	0	0.0%	0		6/1/2013	1	0	0.0%	0
	6/2/2013	30	0	0.0%	0		6/2/2013	6	0	0.0%	0
	6/3/2013	71	0	0.0%	0		6/3/2013	4	0	0.0%	0

Rock Island Dam						Salmon River Trap at Whitebird					
Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts	Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts
CH1	5/28/2013	203	0	0.0%	0	CH1	5/28/2013				
	5/29/2013	350	0	0.0%	0		5/29/2013				
	5/30/2013	342	0	0.0%	0		5/30/2013				
	5/31/2013	313	0	0.0%	1		5/31/2013				
	6/1/2013	162	0	0.0%	1		6/1/2013				
	6/2/2013	149	0	0.0%	1		6/2/2013				
	6/3/2013	93	0	0.0%	0		6/3/2013				
ST	5/28/2013	270	0	0.0%	1	ST	5/28/2013				
	5/29/2013	151	0	0.0%	3		5/29/2013				
	5/30/2013	93	0	0.0%	2		5/30/2013				
	5/31/2013	71	0	0.0%	0		5/31/2013				
	6/1/2013	54	0	0.0%	1		6/1/2013				
	6/2/2013	59	0	0.0%	0		6/2/2013				
	6/3/2013	53	0	0.0%	0		6/3/2013				
CO	5/28/2013	1229	0	0.0%	6	CO	5/28/2013				
	5/29/2013	1409	0	0.0%	8		5/29/2013				
	5/30/2013	918	0	0.0%	2		5/30/2013				
	5/31/2013	611	0	0.0%	3		5/31/2013				

	6/1/2013	429	0	0.0%	1		6/1/2013				
	6/2/2013	349	1	0.3%	6		6/2/2013				
	6/3/2013	209	0	0.0%	4		6/3/2013				
SO	5/28/2013	5	0	0.0%	0	SO	5/28/2013				
	5/29/2013	11	0	0.0%	0		5/29/2013				
	5/30/2013	2	0	0.0%	0		5/30/2013				
	5/31/2013	4	0	0.0%	1		5/31/2013				
	6/1/2013	4	0	0.0%	0		6/1/2013				
	6/2/2013	5	0	0.0%	0		6/2/2013				
	6/3/2013	4	0	0.0%	0		6/3/2013				
CH0	5/28/2013	8	0	0.0%	1	CH0	5/28/2013				
	5/29/2013	49	0	0.0%	6		5/29/2013				
	5/30/2013	29	0	0.0%	5		5/30/2013				
	5/31/2013	94	0	0.0%	16		5/31/2013				
	6/1/2013	49	0	0.0%	4		6/1/2013				
	6/2/2013	80	0	0.0%	8		6/2/2013				
	6/3/2013	68	0	0.0%	4		6/3/2013				
Lamprey Juveniles	5/28/2013					Lamprey Juveniles	5/28/2013				
	5/29/2013	1	0	0.0%	0		5/29/2013				
	5/30/2013						5/30/2013				
	5/31/2013						5/31/2013				
	6/1/2013	1	0	0.0%	1		6/1/2013				
	6/2/2013						6/2/2013				
	6/3/2013	1	0	0.0%	0		6/3/2013				

Snake River Trap at Lewiston						Grande Ronde River Trap					
Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts	Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts
CH1	5/28/2013					CH1	5/28/2013				
	5/29/2013						5/29/2013				
	5/30/2013						5/30/2013				
	5/31/2013						5/31/2013				
	6/1/2013						6/1/2013				

	6/2/2013 6/3/2013		6/2/2013 6/3/2013
ST	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013 6/2/2013 6/3/2013	ST	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013 6/2/2013 6/3/2013
CO	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013 6/2/2013 6/3/2013	CO	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013 6/2/2013 6/3/2013
SO	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013 6/2/2013 6/3/2013	SO	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013 6/2/2013 6/3/2013
CH0	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013 6/2/2013 6/3/2013	CH0	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013 6/2/2013 6/3/2013
Lamprey Juveniles	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013	Lamprey Juveniles	5/28/2013 5/29/2013 5/30/2013 5/31/2013 6/1/2013

6/2/2013  
6/3/2013

6/2/2013  
6/3/2013

Imnaha River Trap					
Species	Date	Sample Count	Sample Morts	Percent Sample Mort	Facility Morts
CH1	5/28/2013	4	0	0.0%	0
	5/29/2013	13	0	0.0%	0
	5/30/2013	23	0	0.0%	0
	5/31/2013				
	6/1/2013				
	6/2/2013				
	6/3/2013				
ST	5/28/2013	27	0	0.0%	0
	5/29/2013	82	0	0.0%	0
	5/30/2013	37	4	10.8%	0
	5/31/2013				
	6/1/2013				
	6/2/2013				
	6/3/2013				
CO	5/28/2013				
	5/29/2013				
	5/30/2013				
	5/31/2013				
	6/1/2013				
	6/2/2013				
	6/3/2013				
SO	5/28/2013				
	5/29/2013				
	5/30/2013				
	5/31/2013				
	6/1/2013				
	6/2/2013				

	6/3/2013
CHO	5/28/2013
	5/29/2013
	5/30/2013
	5/31/2013
	6/1/2013
	6/2/2013
	6/3/2013
Lamprey	5/28/2013
Juveniles	5/29/2013
	5/30/2013
	5/31/2013
	6/1/2013
	6/2/2013
	6/3/2013

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

June 5, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Meeting Minutes/Notes Review**

TMT reviewed the 5/29 Official Minutes and Facilitator's Notes. The notes were approved with no further edits.

Sherri Sears, Colville Tribe, asked about the Corps' daily average flows for May, and why The Dalles was lower than John Day. The Corps looked at the data and said they did not see it as too unusual, that it could be due to 'noise' in the spillway and/or irrigation. Bill Proctor, Corps, said he would look in to it and get back to TMT if a problem with the data was discovered.

### **Bonneville Operations**

Doug Baus, Corps, shared current operations, descaling and mortality data from the last week. With average inflows now down below 300 kcfs, the Corps has had no problem limiting flow through PH 2 to the mid-range of 1%. Over the last two weeks descaling rates for yearling Chinook have ranged 0-5.5%, and for sockeye the range has been 2.8-14.4% (adjusted to remove two outlier days of 0% and 22% with a very low number of fish analyzed). Over the last week mortality rates for yearling Chinook have ranged 0-0.6% and for sockeye, 0-4.0%. Looking ahead, inflows at 250 kcfs are expected to trend downward to about 241 kcfs ten days out. The Corps had committed to the current operation until this afternoon and asked TMT for feedback.

Paul Wagner, NOAA, said the salmon managers preferred continuing the current operation for now to support migrating subyearling Chinook entering the Bonneville area.

The group also discussed the FPOM Change Form process – an FPOM meeting is scheduled for 6/13 at which the change form will be presented in final draft and submitted for policy consideration and decision. Part of the decision making for the Corps is whether it can meet the proposed operating plan while still meeting state water quality standard requirements.

**Action/Planned Operation:** The Corps planned to continue with current operations at Bonneville as long as inflows stay below 300 kcfs and until TMT checks in again on 6/19. They will also provide a status update of the FPOM FPP Change Form process at the 6/19 TMT meeting.

## **Dworshak Operations**

Steve Hall, Walla Walla District Corps, reported that a snow flight on 5/31 revealed the snow line at a level between 5,000-6,000 feet indicating about 5% remaining snow pack in the basin, lower than had been anticipated. Given this, the Corps reduced flows at Dworshak from 7.5 kcfs on 6/1 to 3 kcfs on 6/2 to avoid risk to refill at the project. Since then, higher than expected inflows occurred so the Corps increased flows at Dworshak to 4.5 kcfs today (6/5). Steve said they would likely hold flows here until the project reaches full (1600 feet) likely by the end of this week or early next.

Tom Lorz, CRITFC/Umatilla Tribe, said he would have preferred a smoother operation and not the fluctuations in outflows. That said, Steve said the Corps could not have predicted the surprising higher inflows in to the system and had acted based on the information it had and consistent with the operation coordinated with TMT on 5/29.

TMT will hear a Dworshak operations update at their next meeting on 6/19. Steve said he may also have temperature (CEQUAL) data to share at that time.

## **Lower Monumental Spring to Summer Spill**

The RIOG met on 5/30 to discuss the issue elevated by Oregon from TMT on 5/29 with regards to the Corps' planned performance test and the implications for when to transition from spring to summer spill levels at Lower Monumental. RIOG sent the issue to the Senior Hydro Team to develop a policy briefing paper, which happened on 6/5. This policy briefing paper was written to inform the next RIOG discussion of this issue, scheduled for this afternoon. The decision will be shared with TMT and this item will be included on the 6/19 TMT meeting agenda.

## **Operations Review**

**Reservoirs** – John Roache, Reclamation, reported on projects. Hungry Horse was at elevation 3546.9 feet, with 7.5 kcfs outflows and 12-13 kcfs inflows. Grand Coulee was at elevation 1280.3 feet, operating under 'controlled refill' with current inflows ranging 180-190 kcfs. John responded to a question about why Hungry Horse currently discharging less than turbine capacity, saying that a weather event that was anticipated to hit the area at the end of May did not materialize so the project was able to back off outflows. Lisa Wright, Corps, reported on projects. Libby was at elevation 2426.3 feet, with 31 kcfs inflows and 27 kcfs outflows. Albeni Falls was at elevation 2060.4 feet, with 59.4 kcfs inflows and 54.2 kcfs outflows. Dworshak was at elevation 1598 feet, with 9.9 kcfs inflows and 3 kcfs outflows. Lower Granite average inflows were 62.8 kcfs; McNary average inflows were 248 kcfs; and Bonneville average inflows were 243.4 kcfs.

**Fish** – Paul Wagner, NOAA, reported on fish passage. Juvenile yearling Chinook counts peaked and were trending down; at Lower Granite counts were less than 1,000/day and had peaked at 50,000 at McNary. Subyearling were on the uptick, with counts ranging 17,000-30,000/day at Lower Granite. Steelhead passage had peaked and was trending down; the same was true for juvenile sockeye. The lamprey index showed a similar trend, with about 1,100 showing up in the index at John Day. Adult spring Chinook

counts totaled about 83,000 for the season; counts are now considered 'summer'. Lamprey were starting to show up at Bonneville. Tony Norris, BPA, also reported that the Hanford stranding operation was complete.

Water quality – Laura Hamilton, Corps, had previously reported on two gauge malfunctions in May, at The Dalles forebay and Cascade Island. Both had since been fixed and she shared the updated TDG monthly report with TMT today. She also showed June TDG exceedances to date and noted Ice Harbor had been consistently exceeding so spill caps were lowered for that project.

Power system – Nothing to report.

**Next Meeting, June 19 face to face**

Agenda items include:

- Dworshak Operations
- Follow up on Lower Monumental Performance Standard Test and Operation
- Status Update on FPOM FPP Change Form for Bonneville Dam Operations
- Grand Coulee Refill
- Bonneville Operations
- Spill priority list\* (TMT agreed to continue with the current list until further notice)
- June Final WSF
- Libby Summer Operations
- Hanford Reach operation summary (tentative)

**Columbia River Regional Forum**  
**TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES**

**June 5, 2013**

Notes: Pat Vivian

***1. Introduction***

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of the Nez Perce Tribe, BPA, COE, Oregon, NOAA, Montana, Washington, BOR, CRITFC/Umatilla, Colville Tribe and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

***2. Review of May 29 Meeting Minutes***

There were no comments on the meeting notes or official minutes for May 29. They will be considered final unless future concerns are raised.

Sheri Sears, Colville Tribe, conveyed a question from Steve Smith about the accuracy of flow averages for May. With 288.8 kcfs at John Day and 271.4 kcfs at The Dalles, Smith wondered whether the reported increase in flows between John Day and The Dalles was accurate. Spill data reflect uncertainty about how much water is actually passing the project, Tony Norris, BPA, said. Irrigation withdrawals are also a factor, Bill Proctor, COE, noted. Sears will explain this to Smith, and the COE will review the data for obvious errors.

***3. Bonneville Dam Operations***

Baus showed TMT three attachments to this item on today's agenda. Attachment 3a shows current operations data over the past week of implementing special PH2 operations to minimize descaling. Average flow data on June 4 show the PH2 units are passing about 13.8 kcfs each, which is the targeted flow for operation to the midpoint of 1%. The COE is successfully targeting the midpoint of 1% at Bonneville PH2. In fact, the PH2 units have operated below 40% of the 1% operating range since May 29, Norris said.

Attachment 3b shows descaling data for listed species at Bonneville PH2 over the past two weeks. The range for yearling chinook is 0-5.5% descaled; for sockeye, 0-14.4% descaled (the descaling rate on 6/3 was 22.2% but the sample size was limited on this date with only 18 sockeye examined). Mortality data for the same two species are shown in attachment 3c. For yearling chinook, the mortality rate is 0.0%-0.6%; for sockeye, 0.0%-4.0%.

The current inflow forecast at Bonneville is in the 250 kcfs range, and a continued downward trend is expected over the next 10 days, possibly longer. As long

as flows at Bonneville remain below 300 kcfs, the current operation can continue. With the operation set to expire this afternoon, Baus asked TMT for recommendations.

The next species of concern will be subyearlings, Paul Wagner, NOAA, said. Continuing the current operation into summer until the next TMT check-in would be advisable. Tom Lorz, CRITFC/Umatilla, asked why we need to continue coordinating this as a special operation at TMT since the FPP already includes a discussion of the PH2 midpoint operation that the Salmon Managers would like to see implemented as described in the SOR 2013-3. Page BON-34 of the 2013 Fish Passage Plan states, "Turbine units at PH2 will operate at the mid to lower 1% range (unless total dissolved gas waivers are exceeded in the tailrace) of best efficiency and within cavitation limits at various head ranges as shown in **Table BON-16.**" Baus replied as discussed in 2012 the Action Agencies recognized this language was inadvertently included in the 2011 FPP during FPOM and TMT meetings. It should be redacted but due to all the ongoing efforts to minimize descaling that have been underway (working group, current change form, turbulence reduction device testing, PH1 data mining exercise to evaluate PH1 survival) it did not appear be an efficient use of time to make minor modifications to the FPP language at the time. The goal is to update the FPP at the culmination of these efforts so BON operations are clearly reflected in the FPP.

The draft change form will be finalized at FPOM on June 13 and submitted to the Action Agencies for review on that date. Lorz asked whether TMT will receive official word next week on where the Action Agencies stand with regard to the change form request, and Baus said it's possible the issue will be elevated to RIOG. Statler asked why resolution at FPOM is not anticipated. The change form has significant policy implications that will need to be vetted through proper channels, Baus replied.

As for the Bonneville operation over the next week, current and forecasted inflows will allow the PH2 units to continue to operate up to the mid range of 1%. The required policy deliberations over the change form will therefore have no impact on fish in the river, Scott Bettin, BPA, said. Changing the FPP in a way that has regulatory impacts is what takes time, Lisa Wright, COE, said. TMT will revisit this issue at its next meeting June 19 after FPOM has met.

#### ***4. Dworshak Operations***

Steve Hall, COE Walla Walla, reported. Data from a May 31 snow flight indicated that only 5% of the basin has snowpack remaining. This was less than expected, so the COE reduced discharges at Dworshak to 3 kcfs on June 2 from the 7.5 kcfs that TMT agreed upon last week.

With flows in the Snake dropping rapidly, it would have been preferable to ramp down to 5 kcfs, then 4 kcfs, Lorz said. There is nearly a month left to raise the reservoir elevation by 1.5 feet to touch full at 1600 – plenty of time. Lorz asked the Action Agencies to smooth out the Dworshak operation. In managing inflows at Dworshak, the COE has multiple things to consider, such as modeling temperatures at Lower Granite,

Hall said. There's also a need to protect the local economy, which is largely driven by lake recreation. The goal is not to refill Dworshak on a specific date but to refill as soon as possible after inflows drop below full powerhouse. Meanwhile, inflows have plateaued at 10 kcfs instead of plunging as forecasted.

Hall reminded TMT that last week's coordinated Dworshak operation was 7.5 kcfs discharges followed by a rampdown to 3.5 kcfs. In hindsight, it would have been possible to ramp down to 4 kcfs or higher, but the snow flight information gave compelling indication that flows would drop rapidly. The plan is to fill Dworshak to 1600 feet and keep outflows low to preserve as much water as possible for temperature augmentation. All indications are that water will be needed this summer. For now, Dworshak releases will increase to 4.5 kcfs and continue at that level until the reservoir touches full, probably by the end of this week or early next week.

TMT will revisit Dworshak operations at its next meeting June 19. Depending on forecasts, the COE might provide TMT with CEQUAL-W2 model runs to track temperatures in the Lower Granite tailrace. This year differs from recent years in that runoff is happening significantly earlier than usual, so we can't compare the 2013 operation to those of recent years, Hall said.

## ***5. Lower Monumental Dam Spring to Summer***

Baus reported that the senior hydro team met yesterday to consider the date for beginning summer spill this year in light of performance testing under way at Lower Monumental Dam. Fish are being tagged and released although summer spill has not yet begun. RIOG will meet today to review the technical document the senior hydro team prepared in response to Oregon's objection to beginning summer spill for performance testing earlier than June 21, the approximate date specified in the FOP.

There was discussion of whether the performance test could be conducted in a valid way without altering the start of summer spill, and whether the test will measure a specific operation or the status of the ESUs. The technical document RIOG is reviewing today is confidential, so TMT members who want a copy should contact their RIOG representative.

## ***6. Operations Review***

**a. Reservoirs.** Hungry Horse is at elevation 3546.9 feet, with inflows of 12-13 kcfs and releases of 7.5 kcfs. Brian Marotz said Montana appreciates BOR's efforts to reduce gas when HGH was spilling and asked what's happening with outflows now. Since a weather event that was anticipated to hit the area at the end of May did not materialize, the project was able to back off outflows and eliminate spill, John Roache replied.

Grand Coulee is at elevation 1280.3 feet, operating on controlled refill. Inflows have been holding steady at 180-190 kcfs. A slow decline in inflows is expected over the next few weeks.

Libby is at elevation 2426.3 feet, with inflows of 31 kcfs and releases of 27 kcfs. Jim Litchfield, Montana, asked what the plan is for ramping down Libby releases. The project will release full powerhouse flows for another day or two, then drop to 22 kcfs releases on June 7 and 16-20 kcfs over the weekend, Norris replied. Marotz made a distinction between this year's sturgeon operation, which combined a spring sturgeon pulse for staging with a later one for migration, from the dreaded "double peak" later in the summer that does biological damage downstream of Libby reservoir. The current operation is not damaging and should never be described as a double peak.

Albeni Falls is at elevation 2060.4 feet, with inflows of 59.4 kcfs and releases of 54.2 kcfs. Dworshak is at elevation 1598 feet, with inflows of 9.9 kcfs and releases of 3 kcfs.

McNary daily average inflows are 248 kcfs. Bonneville daily average inflows are 243.4 kcfs. Lower Granite average inflows are 62.8 kcfs.

Baus noted that the current spill priority list is set to expire June 15. Would the Salmon Managers be amenable to keeping the current list in place until the next TMT meeting on June 19? The Salmon Managers present at today's meeting all agreed that would be acceptable.

**b. Fish. Juveniles:** Yearling chinook passage at Lower Granite has been less than 1,000 fish per day for some time, Wagner reported. The same is true at Little Goose and Lower Monumental, each of which are passing less than 1,000 fish per day, with 50,000 passing McNary, John Day and Bonneville. All project counts have been declining. Steelhead, sockeye and juvenile lamprey numbers are also following a downward trend.

Subyearling chinook passage is the coming attraction. Lower Granite had a passage index count of 30,000 subyearlings a week ago, with lower river projects seeing the same increases. On June 4 the trigger for summer spill of 50% or more juveniles for 3 consecutive days was reached at Lower Granite, Lisa Wright, COE, reported.

**Adults:** The transition from spring to summer chinook happened abruptly on June 1, Wagner said. Spring chinook passage at Bonneville this year was only 59% of the 10 year average, with other projects passing similarly low percentages. Chinook jack passage, however, was 166% of the 10 year average, and summer chinook jack passage is 142% of the 10 year average. Lamprey passage season is just beginning at Bonneville.

**c. Water Quality.** Laura Hamilton, COE, showed TMT the latest TDG report posted to the TMT page. Since the last TMT meeting she realized the report listed raw data, not revised data, which has been corrected. On May 16, the Cascade Island gage only recorded 2 hours of data, and on May 17 about 8 hours of data, with a red background in the graph to denote the data are not valid. Hamilton also reported that the spill cap at Ice Harbor was lowered in response to a series of TDG exceedances.

**d. Power System.** The Hanford stranding operation has been completed, Norris reported. No lamprey strandings have been reported.

## **6. Next TMT Meeting**

The next TMT meeting in person will be June 19. Dworshak, Bonneville, and Lower Monumental operations, as well as Grand Coulee refill, will be on that agenda. There will be a possible conference call on July 3, followed by meetings in person on July 10 and 24, and on August 7 and 21.

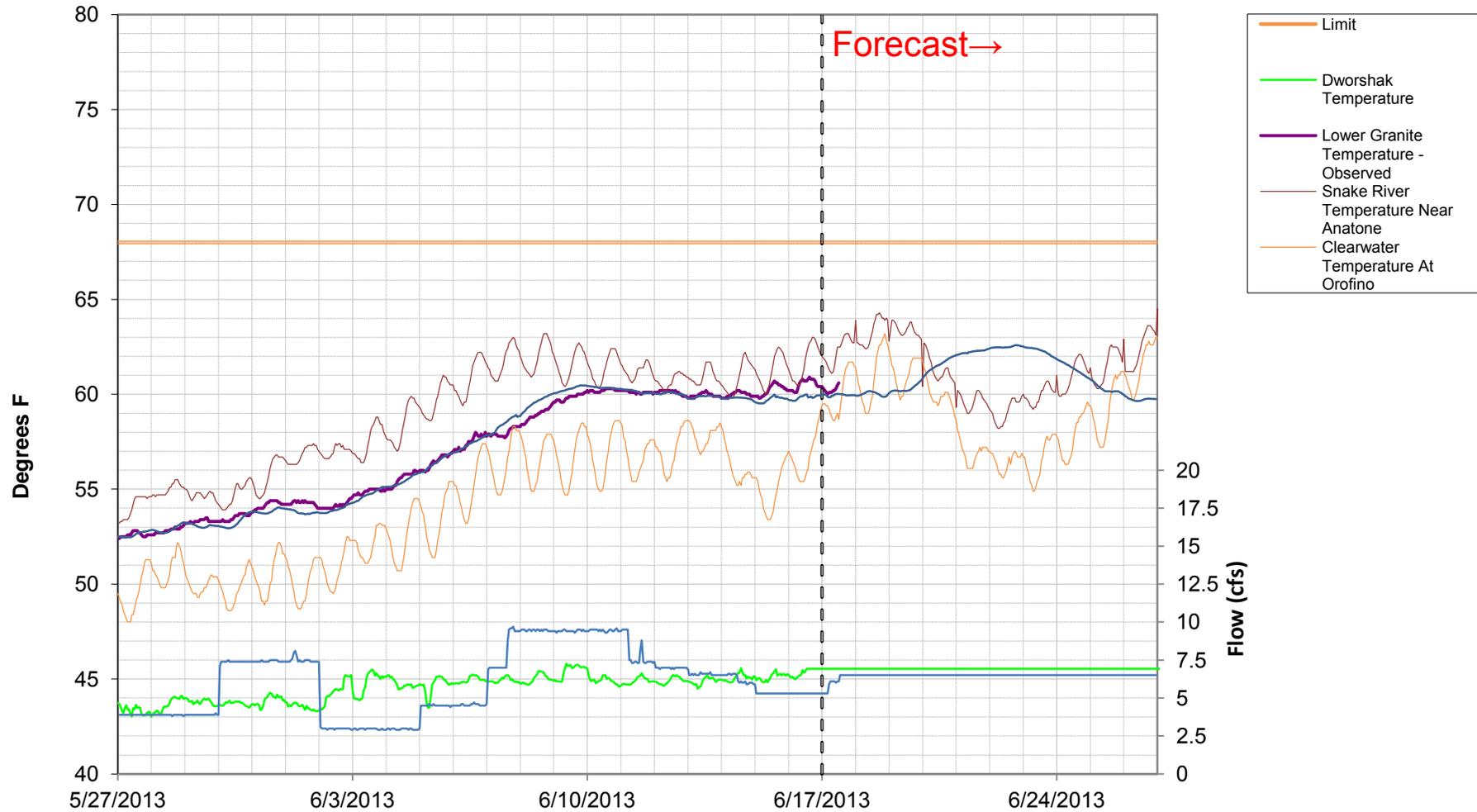
<b>Name</b>	<b>Affiliation</b>
Dave Statler	Nez Perce
Tony Norris	BPA
Lisa Wright	COE
Erick Van Dyke	Oregon
Paul Wagner	NOAA
Jim Litchfield	Montana
Doug Baus	COE
Bill Proctor	COE
Scott Bettin	BPA
Karl Kanbergs	COE
Laura Hamilton	COE
Dan Feil	COE
Charles Morrill	Washington

### *Phone:*

John Roache	BOR
Tom Lorz	CRITFC/Umatilla
Sheri Sears	Colville
Margaret Filardo	FPC
Russ George	WMC
Bruce McKay	hydro consultant
Ruth Burris	PGE
Heather Dohan	Puget
Barry Espenson	CBB
Steve Hall	COE
Agnes Lut	BPA
Brian Marotz	Montana
Shane Scott	PPC

Output from CEQUALUtility Pre-processor  
Analog Year 2003 (+2 offset)  
6.5 kcfs out

### Water Temperature Comparisons Model from 5/27/2013 to 6/27/2013 Observed Data to 6/17/2013



# TECHNICAL MANAGEMENT TEAM

**BOR:** John Roache / Mary Mellema / Pat McGrane  
**NOAA-F:** Paul Wagner / Richard Domingue  
**OR:** Erick Van Dyke  
**WDFW:** Charles Morrill  
**Kootenai:** Sue Ireland / Billy Barquin  
**Colville:** Sheri Sears / Keith Wolf  
**Umatilla:** Tom Lorz (CRITFC)

**BPA:** Tony Norris / Scott Bettin / Robyn MacKay  
**USFWS:** David Wills / Steve Haeseker  
**ID:** Russ Kiefer / Pete Hassemer  
**MT:** Jim Litchfield / Brian Marotz  
**Spokane:** Andy Miller  
**Nez Perce:** Dave Statler

**COE:** Doug Baus / Karl Kanbergs

## TMT MEETING

Wednesday June 19, 2013 9:00am - 12:00pm

1125 N.W. Couch Street, Suite 500, Columbia Room  
Portland, Oregon 97209-4142  
Map Quest [\[Directions\]](#)

**TMT MEETING**  
Phone Number (877) 336-1274  
Access Code 3871669  
Security Code 6393

**We have had disruptions on the phone because people are not hitting 'mute' after dial in.  
Please MUTE your Phone**

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*All members are encouraged to call Robin Gumpert with any issues or concerns they would like to see addressed.  
Please e-mail her at [rgumpert@cnmw.net](mailto:rgumpert@cnmw.net) or call her at (503) 248-4703.*

*Note: Members of the public are encouraged to refer to the Official Meeting Minutes and the TMT agenda links for information re: discussions and decisions made at TMT. Operational decisions that are made outside a TMT meeting will be reported on at the next scheduled meeting and/or linked to the agenda item of the meeting at which it was discussed, as soon as is reasonably possible.*

## AGENDA

1. Welcome and Introductions
2. Review Meeting Minutes - [June 5](#)
3. Water Supply Forecast - Doug Baus, COE-NWD
  - a. [June Final WSF](#)
4. Hanford Reach Protection Program - Russell Langshaw, Grant County PUD
  - a. [Monthly Summary](#)
5. Libby Summer Operations - Joel Fenolio, COE-NWS
  - a. [Summary](#)

6. Dworshak Temperature Control Operation - *Steve Hall - COE-NWW*
  - a. [Water Temperature Comparisons](#)
7. Treaty Fishing - *Kyle Dittmer - CRITFC*
  - a. [SOR2013-C1](#)
8. Grand Coulee Refill - *John Roache, BOR*
9. Bonneville Dam Operations - *Doug Baus, COE-NWD*
10. Spill Priority List - *Doug Baus, COE-NWD*
  - a. [List](#)
11. Lower Monumental Dam Spring to Summer - *Doug Baus, COE-NWD*
12. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Water Quality
  - d. Power System
13. Other
  - a. Set agenda and date for next meeting - **June 26, 2013**
  - b. [\[Calendar 2013\]](#)

*Questions about the meeting may be referred to:  
[Doug Baus](#) at (503) 808-3995*

# Libby Dam Operations for 2013

**Joel Fenolio**

Upper Columbia Senior Water Manager

Seattle District

19 June 2013



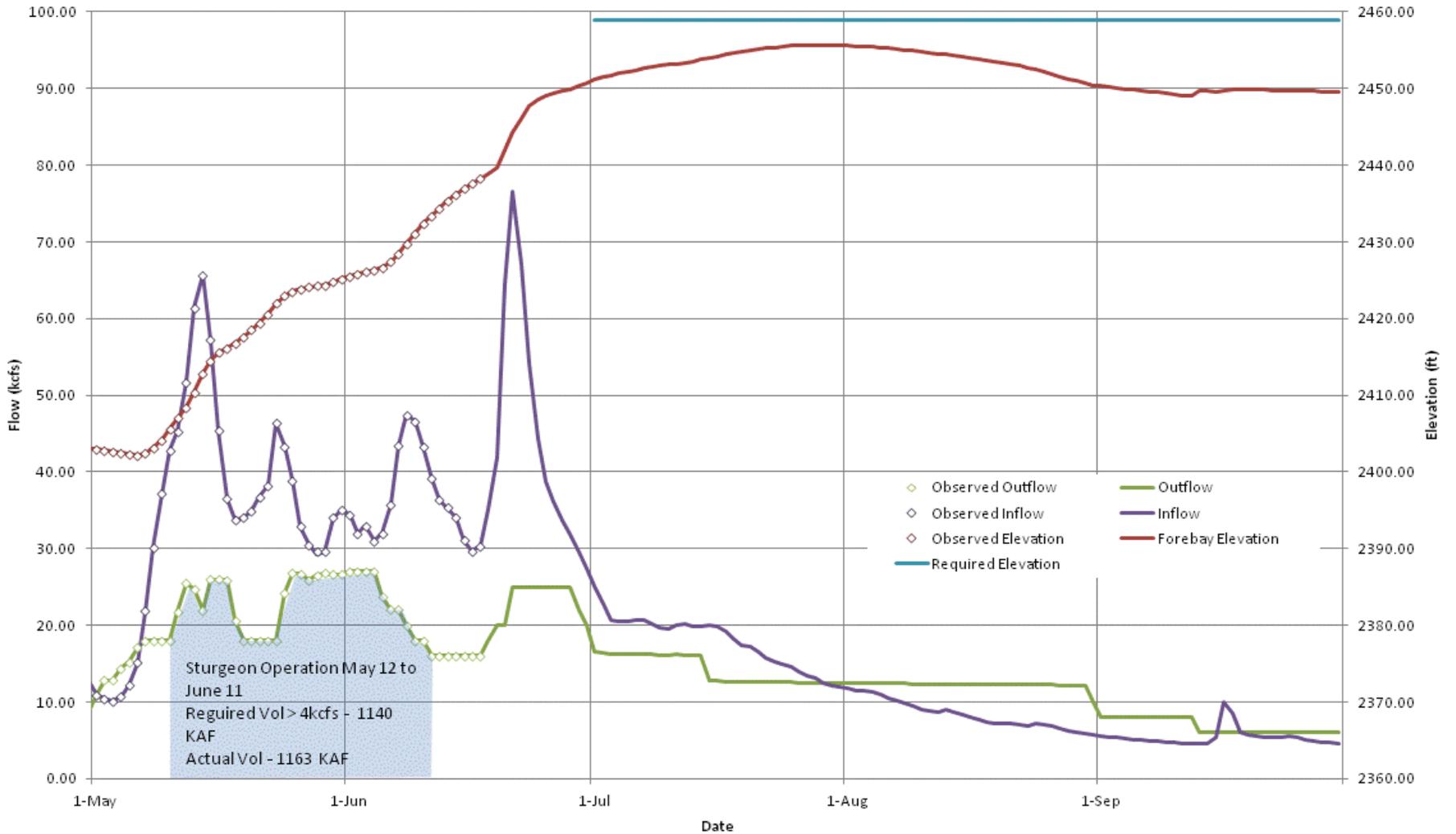
US Army Corps of Engineers  
**BUILDING STRONG**®

# Operations

- Current Elevation is 2439.8 ft  
(1.3 MAF of Space out of 5 MAF total for Flood Control)
- Currently releasing 16 kcfs
- Coming Operations
  - ▶ Summer Operations
    - 30 June Lake Kooconusa target elevations 2445 – 2450 ft
    - 31 Aug Lake Kooconusa target elevations 2449 – 2451.6 ft
    - For Sept support Kootenai Tribe Habitat Work
      - ▷ If kooconusa elevation > 2449 ft release 8 kcfs until reached or 30 Sept
      - ▷ Once 2449 ft is reached in Sept ramp to 9 kcfs for balance of the month



# Lake Koocanusa Operations 2013



**Columbia River Regional Forum**  
**TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES**

**June 19, 2013**

Notes: Pat Vivian

***1. Introduction***

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of Washington, BPA, Montana, Oregon, NOAA, USFWS, BPA, Nez Perce Tribe, COE, Idaho, CRITFC/Umatilla Tribe and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

***2. Review of May 29 Meeting Minutes***

There were no comments on the June 5 meeting notes or official minutes. They will be considered final unless future concerns are raised.

***3. Water Supply Forecast***

Baus and John Roache, BOR, presented the latest water supply forecasts for individual basins in relation to average flows, based on updated 30 year (1980-2010) historical averages:

- The Dalles (April-August) – 96% of average
- Lower Granite (April-September) – 73% of average
- Dworshak (April-July) – 89% of average
- Libby (April-August) – 110% of average
- Hungry Horse (April-August) – 2042 KAF, 105% of average  
(May-September) 1766 KAF, 104% of average  
(June-July) 740 KAF – 86% of average

This information is also available on the TMT website under the Official Water Supply Forecast link, Lisa Wright, COE, said.

***4. Hanford Reach Protection Program***

Russell Langshaw, Grant PUD, reported on this year's Hanford Reach protection program. Results are shown in a slide presentation attached to this item on today's agenda.

Rearing protections began on March 2 and ended June 2, which is early. Temperatures were well above the historical average, which is why the season ended so soon. The 2013 Hanford Reach protection program was in effect for 93 days, of which 34 days had flow constraints of 20-30 kcfs. The remaining 59 days had constraints of either 40-60 kcfs or 150 kcfs minimums, which have been in

effect for the past three weeks. Average daily flows have been, on average, almost 14 kcfs less than the flow constraints. There were only two exceedances this season, one of which was planned and resulted in a better operation than if the constraint had been met. Recent changes in the way Grant PUD operates under the Hanford Reach rearing protection program have resulted in a significantly improved ability to meet flow constraints.

This is the third year of stranding/entrapment monitoring in connection with the program, Langshaw reported. This year, 3.9 chinook were stranded per entrapment, which is higher than last year's rate of 2.9 chinook per entrapment. Minimizing flow fluctuations reduces the number of entrapments. Langshaw predicted this year's operation will result in fewer entrapments, similar to 2011 when 150,000-175,000 fish were stranded. In response to queries from TMT, Langshaw will post a link on the TMT website to the 2011-12 and 2003 annual reports for the Hanford Reach protection program.

### ***5. Libby Summer Operations Update***

Joel Fenolio, COE Seattle, gave a slideshow which is linked to today's agenda. The project has been releasing 16 kcfs for the past week since the sturgeon pulse ended. Current reservoir elevation is 2439.8 feet, with a June 30 target of 2445-2450 feet. When that goal has been attained, Libby will go into refill mode to reach elevation 2054-55 feet by late July/early August, which is considered full. Elevation 2459 feet is technically considered full pool, but the COE does not target that elevation to save space in late June and through July for unexpected precipitation events and also for recreational concerns at Lake Koochanusa. The target end of August elevation is 2449-2451.6 feet to accommodate the Kootenai Tribe sturgeon habitat restoration SOR of near minimum flows beginning September 1. If the lake elevation is not 2449 feet by the end of August, the project will continue releases of 8 kcfs until elevation 2449 feet has been attained or the end of September. If 2449 ft is reached prior to or during the month of September, releases will be decreased to the Bull Trout minimum of 6 kcfs.

The projected May-September operation of Libby is shown in slide 2. Inflow projections recently spiked from 30 kcfs to 75-80 kcfs over the next several days. The COE had planned to hold releases at 16 kcfs through June 30 but will have to increase releases up to 20 kcfs for the next week or so in response to the rising forecast. It might even be necessary to go to full powerhouse capacity for a while until inflows recede. Jim Litchfield, Montana, asked whether it really will be necessary to go to full powerhouse; Fenolio said that will depend on how severe the predicted precipitation event is this week.

USFWS seemed pleased with the results of double pulsing the sturgeon pulse this year but it is too soon to know the results in terms of sturgeon spawning. TMT will revisit Libby operations at its next meeting July 10.

## **6. Dworshak Temperature Control Operation**

Steve Hall, COE Walla Walla, gave a slideshow linked to today's agenda. The Dworshak basin is entering a period of higher precipitation over the next few days with cooler temperatures and increased flows. Current Dworshak outflow temperature is 42-43 degrees F. Thanks to this cooling trend, temperatures at Lower Granite tailwater are expected to drop to the 60 degrees F range. The latest model shows temperatures dropping to 59 degrees and coming back up to 60 degrees by June 29. That means flow augmentation from Dworshak is not needed at this time.

Charles Morrill, Washington, pointed out that temperatures at the Lower Granite juvenile fish facility are currently about 3 degrees F above average. The 10-day weather forecast is predicting cooler temperatures for the next several days, Hall replied. Temperatures at Lower Granite tailwater are expected to remain cool over the next week.

Dave Statler, Nez Perce, asked whether Dworshak discharge temperatures are at their lowest point in terms of hatchery concerns. Generally the hatchery doesn't like temperatures below 42 degrees F; currently Dworshak releases are around 45 degrees F, David Wills, USFWS, replied. Wills said he will confer with hatchery managers and report back to TMT their preferences regarding Dworshak discharge temperatures. Statler commented that warmer temperatures for the hatchery would be at cross-purposes with Nez Perce operational goals.

Statler asked whether the RO tubes are in use at Dworshak. Hall said there will be no releases through the ROs or spillway until temperature augmentation flows begin. The latest water temperature reports are available on the TMT webpage under the Water Temperature Reports link. Hall will continue to produce weekly models predicting Dworshak outflow temperatures and email those to TMT members. TMT will revisit Dworshak operations at its next meeting July 10.

## **7. Treaty Fishing – SOR 2013-C1**

Two weeks of treaty fishing are currently planned, June 17-21 and June 24-27, Kyle Dittmer, CRITFC, reported. SOR 2013-C1 requests the usual 1.5-foot forebay operating band in the three lower Columbia River pools, Bonneville, The Dalles and John Day, for the duration of the fishery.

This year's run forecast is more than 73,000 summer chinook, which is above normal, and more than 108,000 sockeye. There are 367 nets in the three lower Columbia pools, with about 33% of those at Bonneville, 23% at The Dalles and 44% at John Day. The COE has provided guidance to the projects and is implementing the SOR.

## **8. Grand Coulee Refill**

Current reservoir elevation is 1285.9 feet and the project is slowly filling, John Roache, BOR, reported. Full is typically 1290 feet elevation at Lake Roosevelt, but this year 1289.8 feet has been targeted as full. Inflows are slowly receding. Goals for Grand Coulee are to provide a smooth operation with enough water for refill, summer flow augmentation, and to provide a recreation benefit during the July 4<sup>th</sup> weekend by providing beach access with lower lake elevations. The current plan is to have Lake Roosevelt somewhere around 1286 ft on July 4 and then fill sometime between July 8-14. Lake Roosevelt could hit full prior to July 4, depending on inflows, but will most likely fill after the July 4<sup>th</sup> weekend. TMT will revisit Grand Coulee operations at its next meeting July 10.

## **9. Bonneville Powerhouse 2 Operations**

The COE continues to operate the Bonneville PH2 units within the 1% mid-range, currently at 14.4 kcfs per unit or 72 kcfs flows spread among 6 units, Baus reported. Between now and the end of June, the highest flows of 241 kcfs are expected to occur June 22, with flows dropping to 208 kcfs by the end of June. Low inflows are expected to allow the COE to keep operating the Bonneville PH2 units within the 1% mid-range.

Baus reported on the process of changing the Bonneville PH2 operation in the Fish Passage Plan. The change form was presented to FPOM on June 13 but consensus was not reached due to the Corps needing to coordinate on the Clean Water Act -related policy implications. The FPP change form has been elevated to policy and legal staff for further action. Baus emphasized that resolution of this issue will take time for the Corps to coordinate, with fall being the soonest a decision could be expected. Statler expressed concern that we not go into another passage season with this issue unresolved. The COE hopes to resolve this issue by the end of the year and include the requested change in the FPP, Baus said. Wright explained the schedule for making changes to the FPP:

- December 15 – Deadline for submission of 2014 FPP change forms.
- December 31 – All FPP change forms will be posted to the Draft 2014 FPP site (link on TMT site) for regional review.
- Mid to late January –FPOM meets to review the change forms. Those with approval of all FPOM members will be included in the final 2014 Fish Passage Plan that goes into effect March 1, 2014.

TMT will revisit Bonneville operations in September. Baus will update TMT on the change form for Bonneville PH2 operations then.

## **10. Spill Priority List**

The spill priority list posted to today's agenda is proposed to be effective from today through August 31, Baus said. The COE has recommended keeping this list in effect at least until July 12, to allow fish tagged for performance tests at Lower Monumental and Little Goose to egress from the system. The last tagging will be done July 8.

The Salmon Managers discussed this list in yesterday's FPAC call, Paul Wagner, NOAA, reported. It would make sense to keep this list in effect from June 19-July 12 and revert to a traditional top-down order (Lower Granite downstream to Bonneville), subject to revision at the time. TMT will revisit spill priorities at its next meeting July 10.

### ***11. Lower Monumental Dam Spring to Summer***

As a result of RIOG's recent decision, the COE will transition LMN from spring gas cap spill to summer spill of 17 kcfs on June 21, Baus reported. The issue was elevated to RIOG when Oregon objected to an earlier start of summer spill for performance testing. Erick Van Dyke, Oregon, thanked the COE for implementing Oregon's suggestion to stick with the June 21 start date for summer spill. Oregon would have preferred a less conservative approach to gas cap spill since the decision.

### ***12. Lower Granite Outfall Data Collection Issue***

This FPOM issue was added to today's agenda at the request of Russ Kiefer, Idaho. Regarding collection of data for siting the new juvenile bypass outfall at Lower Granite, Idaho and CRITFC have questions about the COE's decision not to collect data in the tailrace at flows of 75 kcfs with no spill. Kiefer wanted to know why the data were not collected. Idaho and CRITFC had made similar proposals to spread the risk by increasing spill at Lower Granite during evening hours and on the day before and after the cessation of spill for data collection.

Kiefer and Lorz expressed concern at how the draft FPOM meeting notes characterized their positions. Baus provided the names of COE contacts who can revise the notes and clarify how this decision was made.

### ***13. Operations Review***

**a. Reservoirs.** Hungry Horse is at elevation 3555.7 feet, with inflows of 9 kcfs and releases of 5 kcfs. The project is slowly filling. Grand Coulee is at elevation 1285.9 feet, as discussed earlier today. Libby is at elevation 2439 feet, with inflows of 31.4 kcfs and releases of 16 kcfs. Albeni Falls is at elevation 2061.5 feet, with inflows of 40.4 kcfs and releases of 39 kcfs. Dworshak is full at elevation 1600 feet, with inflows of 5.6 kcfs and releases of 6.9 kcfs.

McNary daily average inflows are 227.2 kcfs. Summer spill of 50% starts at McNary on June 20. Lower Granite daily average inflows are 47.5 kcfs. Summer spill begins on June 21. Bonneville daily average inflows are 220.8 kcfs. Summer spill began on June 16, alternating two-day treatments of 95 kcfs 24 hours/day with a daytime rate of 85 kcfs and nighttime rate of 121 kcfs. This alternating spill operation will continue at Bonneville through July 21.

**b. Fish. Adults:** To date, 38,000 summer chinook have passed Bonneville, which is 109% of the 10 year average. Daily counts are 2500-3,000 fish. Summer jacks are passing Bonneville at the rate of 800 per day or 11,000 to date, which is 173% of the 10 year average. Sockeye are passing at the rate of 5-6,000 per day and 35,000 to date. This is 128% of the 10 year average but only 46% of last year's stellar run. Lamprey passage is 76% of the 10 year average. July is prime lamprey passage season.

Further upstream, passage numbers are above average for mid Columbia projects and below average at Snake projects. Summer chinook passage at Ice Harbor is only 58% of the 10 year average. Summer jacks, however, are 330% of the 10 year average at Ice Harbor and over 200% of the 10 year average at Priest Rapids.

Juveniles: Yearling chinook passage is winding down, which is typical for this time of year. Yearlings are passing Lower Granite and Little Goose at a rate of less than 100 per day and a little more than 100 per day at Lower Monumental, based on index counts. Yearling passage at other mainstem Columbia projects is likewise trending down, with 2,000 fish per day at McNary, 1,000 per day at John Day, and less than a thousand per day at Bonneville. Steelhead yearling passage is following the same trend as summer chinook. Sockeye passage season is over. Lamprey passage is highest at John Day, with 1,000 per day passing the project.

This is prime subyearling passage time. Passage already peaked, but a bump in flows could bring a bump in passage numbers. The highest index count at Lower Granite was 50,000 fish per day 10 days ago, which is down to 7,000 per day now. Little Goose is passing an average of 10,000 per day over the past week, and Lower Monumental 2,000 per day over the past few days. McNary has seen an increase in numbers of fish coming from Hanford Reach.

**c. Water Quality.** Laura Hamilton, COE, showed TMT the TDG report for May, which is posted to the TMT page in the Operations link (under Documents). On May 16-17, the Bonneville tailwater gage malfunctioned, and on May 19-20, The Dalles tailwater gage malfunctioned. At Lower Granite, an investigation into a leak from May 3 through May 6 contributed to increased TDG in the Little Goose forebay above 115%. The Lower Granite spill cap was lowered to 17 kcfs to bring TDG levels down. There were quite a few TDG exceedances in Ice

Harbor forebay, which is one of the more difficult to manage due to the long travel time of water from Lower Monumental (approximately 3.5 days).

**d. Power System.** The shape of this year's runoff has been favorable despite the lack of volume, Robyn MacKay, BPA, said. There are no oversupply issues or other issues on the horizon.

## **6. Next TMT Meeting**

The next TMT meeting in person will be July 10. Dworshak, Libby summer operations, Dworshak temperature augmentation, Grand Coulee refill, the spill priority list, and possibly treaty fisheries will be on that agenda. There will be conference calls in the meantime if needed.

<b>Name</b>	<b>Affiliation</b>
Charles Morrill	Washington
John Roache	BOR
Robyn MacKay	BPA
Jim Litchfield	Montana
Erick Van Dyke	Oregon
Paul Wagner	NOAA
David Wills	USFWS
Doug Baus	COE
Agnes Lut	BPA
Dave Statler	Nez Perce
Laura Hamilton	COE
Karl Kanbergs	COE
Lisa Wright	COE

### *Phone:*

Russ Kiefer	Idaho
Kyle Dittmer	CRITFC
Ruth Burris	PGE
Shane Scott	PPC
Steve Hall	COE
Russ George	WMC
Bruce McKay	consultant
Barry Espenson	CBB
Richelle Beck	Grant PUD
Joel Fenolio	COE Seattle
Tom Lorz	CRITFC
Russell Langshaw	Grant PUD

John Roache	BOR
Tom Lorz	CRITFC/Umatilla

Sheri Sears	Colville
Margaret Filardo	FPC
Russ George	WMC
Bruce McKay	hydro consultant
Ruth Burris	PGE
Heather Dohan	Puget
Barry Espenson	CBB
Steve Hall	COE
Agnes Lut	BPA
Brian Marotz	Montana
Shane Scott	PPC

# COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

June 19, 2013

## DRAFT Facilitator's Summary

Facilitator: Robin Gumpert

*The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.*

### **Meeting Minutes/Notes Review**

TMT reviewed the 6/5 Official Minutes and Facilitator's Notes. The notes were approved with no further edits.

### **Water Supply Forecasts**

Doug Baus, Corps, and John Roache, Reclamation, shared June final forecasts for their agency's respective projects, and noted that the historic inputs have been updated to reflect the time period 1980-2010:

- The Dalles April – August: 96% of average
- Lower Granite April-September: 73%
- Dworshak April-July: 89%
- Libby April-August: 110%
- Hungry Horse April-August: 2042 kaf (105%)
- Hungry Horse May-September: 1766 kaf (104%)
- Hungry Horse June-July residual runoff: 740 kaf (86%)

### **Libby Summer Operations**

Joel Fenolio, Seattle District Corps, provided an update on current and planned operations. Currently, Libby was at elevation 2439.8 feet and releasing 16 kcfs outflows. The project was targeting 2445-2450 feet by June 30, then refill to about 2454-2455 feet in late July/early August, and targeting 2449 feet end of August to meet the Kootenai habitat restoration request. If the project does not reach that elevation by then, it would release 8 kcfs until the elevation is reached. Joel said forecasts are showing a spike in inflows so the project may need to increase outflows to about 20 kcfs later this week to manage the increase.

A question was asked about how the sturgeon pulse operation went; the Corps and USFWS representatives said preliminary information shows the fish seemed to respond well. When the summary report is available, it will be shared with TMT.

### **Dworshak Operations**

Steve Hall, Walla Walla District Corps, shared temperature modeling comparisons for the 5/27-6/27 period with observed data through 6/17. Currently, Dworshak temperatures are about 43-45 degrees. With forecasts showing additional inflows in to the system, temperatures are expected to recede. For now, Lower Granite temperatures are within and expected to stay at or below 66 degrees so there is not yet a need for flow augmentation.

TMT discussed whether there were any concerns from the hatchery about the cool temperatures at Dworshak. Dave Wills, USFWS, said he had not heard any but would double check. There is not a lot of flexibility at the project to cool the temperatures without affecting TDG, but the project could increase temperatures if necessary for the hatchery fish – keeping in mind the balance needed to support cooler temperatures in the system below the project. Steve Hall added that water temperature data reports showing Anatone and Orofino inputs and hourly and 12-hour average tailwater temperatures at Dworshak are available on the TMT site.

Action/Next Steps: Steve Hall will produce and share weekly temperature models with TMT. Russ Kiefer, Idaho, said when he begins to run his temperature model, he will share that with TMT. TMT will revisit this issue at their next face to face meeting on 7/10, unless a change in conditions warrants a call sooner.

### **Hanford Reach Protection Program**

Russell Langshaw, Grant County PUD, shared a monthly and full season summary of protection operations in Hanford Reach. The rearing period for protection was 3/2-6/2. Temperatures stayed well above the mean average so the protection period was short. Priest Rapids dam was operated at 150 kcfs minimums for the last three weeks of the operation. Russell shared an overall summary of operations, daily deltas and exceedances. With just two exceedances for the year (one planned), he and Paul Wagner, NOAA, noted that this was a very successful year in terms of compliance and program performance.

Action/Next Steps: Russell will share a link to the 2011 and 2012 reports; and when available, the current year report.

### **Treaty Fishing SOR**

Kyle Dittmer, CRITFC, shared the tribal request for a two-week operation to support treaty fishing: for the periods 6/17-6/21 and 6/24-6/27, hold the lower pools (Bonneville, John Day, and The Dalles) to a hard constraint within 1.5 feet fluctuations.

Action: Doug Baus, Corps, said guidance had been sent to the projects to implement the request.

### **Grand Coulee Refill**

John Roache, Reclamation, reported that the project was currently at elevation 1285.9 feet. To meet objectives of a steady refill/flow, provide recreation benefits over the July 4<sup>th</sup> weekend and to provide summer flow augmentation, Reclamation is targeting 1289.8 feet around July 8-14 depending on inflows to the system. There is also the possibility that Lake Roosevelt could touch full (1289.8 feet this year) prior to the July 4 weekend, depending on inflows, but will draft down to 1286 feet or so on July 4 and then fill above 1286 feet after the July 4<sup>th</sup> weekend.

### **Bonneville Dam Operations**

Doug Baus, Corps, reported that since TMT last met, PH2 has been operating within the mid-point of 1% and given forecasts for June and July, should be able to continue to do so. He reported that the Fish Passage Plan change form was presented at FPOM on 6/13 and is now being reviewed by Corps policy and legal staff. A decision will be made in time for next year's operations, but likely not until later this year. The Corps clarified that, typically, the deadline for submitting change forms to the FPP is 12/31, and they are reviewed early the following year for final decision prior to the fish passage season. That said, everyone recognized that this issue has high importance to the region and has been submitted well in advance of the typical deadline.

Action: Doug Baus will relay the request to hear a decision from the Corps on this issue as soon as possible. He will return to TMT no later than the Fall (end of September/early October) with a status update and/or decision. This issue will also be tracked through the FPOM process.

Action: Robyn McKay, BPA, will pass on a request from Tom Lorz, convener of the FPOM work group charged with developing the proposed change form, to share turbine loading data in case the work group is asked to do any follow up review and analysis.

### **Spill Priority List**

The Corps proposed maintaining the current spill priority list (linked to the TMT agenda) through July 12 until performance standard testing is complete. Paul Wagner, NOAA, on behalf of the salmon managers, agreed to this proposal and offered initial input on revisions to the list after that time.

Action: The current list will be extended through 7/12. TMT will revisit the list on 7/10 and discuss proposed changes to the list for implementation after 7/12.

### **Lower Monumental Spring to Summer Spill**

Doug Baus, Corps, reported that the issue elevated by Oregon from TMT to the RIOG went through the Senior Hydro Team to develop a policy briefing paper, and this was used to inform RIOG deliberations. Ultimately, the Corps agreed to meet Oregon's request to maintain spring spill at Lower Monumental through 6/20 and have been operating Lower Monumental per that guidance.

Erick Van Dyke, Oregon, expressed appreciation to the Corps for meeting Oregon's interests, and said he would have preferred a less conservative approach to managing to gas caps. However, he appreciated the effort by the Corps.

### **Lower Granite Outfall Data Collection Issue**

Russ Kiefer, Idaho, raised a concern stemming from FPOM around the Corps' coordination to collect data points at Lower Granite to site the new bypass outfall. When the Corps sent the proposal out, Idaho Fish & Game and CRITFC recommended that nighttime spill be increased to maintain overall planned spill volumes and SPE. Since then, the Corps decided not to collect the data point. Russ raised the concerns that this data point was not collected, and that the draft notes from the FPOM meeting indicated that the Corps did not collect the data point because there was no consensus from IDFG and CRITFC. He asked the Corps to clarify its decision process and also the importance to the Corps for collecting the data point.

Action: Russ and Tom will connect with the Corps FPOM coordinator, Tammy Mackey, and Corps District decision maker, Ann Setter, on this issue.

### **Operations Review**

Reservoirs – John Roache, Reclamation, reported on projects. Hungry Horse was at elevation 3555.7 feet, with 5 kcfs outflows and 8-9 kcfs inflows. Grand Coulee was at elevation 1285.9 feet. Lisa Wright, Corps, reported on projects. Libby was at elevation 2439 feet, with 31.4 kcfs inflows and 16 kcfs outflows. Albeni Falls was at elevation 2061.5 feet, with 40.4 kcfs inflows and 39 kcfs outflows. Dworshak was at elevation 1600 feet, with 5.6 kcfs inflows and 6.9 kcfs outflows. Lower Granite average inflows were 47.5 kcfs; McNary average inflows were 227.2 kcfs; and Bonneville average inflows were 220.8 kcfs. Summer spill operations at Bonneville began 6/16 and will continue through 7/21. McNary 50% summer spill operations begin on 6/20.

Fish – Paul Wagner, NOAA, reported on fish passage. Adult summer Chinook at Bonneville were 109% of the 10-year average. Jacks were also well above the 10 year average, 173%. Upriver, the 10 year average fluctuates, with Ice Harbor at 56% and Priest Rapids well above. Sockeye at Bonneville were tracking 128% of the 10-year average and lamprey were tracking similar to 2012, 76% of the 10-year average.

Juvenile yearling Chinook counts were well past their peak and were trending down; at Lower Granite counts were less than 100/day and 2,000/day at McNary. Subyearling counts were past the peak, about 6,000-7,500/day at Lower Granite. Steelhead passage was well past its peak and was trending down; the same was true for juvenile sockeye. The lamprey index showed about 1,000-2,000/day at John Day.

Water quality – Laura Hamilton, Corps, reported on TDG instance types for May, noting that most exceedances were due to high flows, best professional judgment and gauge malfunctions. Over the last two weeks, exceedances were scarce, primarily showing up in the Ice Harbor forebay due to a leak issue at Lower Granite.

Power system – Robyn McKay, BPA, reported that there were no oversupply issues in the system, and the power system was running smoothly.

**Next Meeting, July 10 face to face**

Agenda items include:

- Dworshak Temperature Control Operations
- Libby Summer Operations
- Grand Coulee Refill
- Spill Priority list
- Treaty Fishing
- Transition to Low Flow: Impacts on Spill, MOP and Min Gen Operations
- Operations Review



## COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

729 NE Oregon, Suite 200, Portland, Oregon 97232

Telephone 503 238 0667

Fax 503 235 4228

### SYSTEM OPERATIONAL REQUEST: 2013 C-1

TO: Gen. Anthony Funkhouser COE-NWD  
James D. Barton COE-NWD-NP-Water Management  
Karl Kanbergs, Douglas Baus COE-NWD-NP-WM-RCC  
D. Feil, R. Peters, D. Ponganis COE-NWD-PDD (Fish Management Office)  
JR Inglis/Paul Cloutier COE-Portland District/NWD (Tribal Liaison)  
Lorri Lee USBR- PNW Regional Director  
Bill Drummond BPA Administrator  
Steve Oliver, Greg Delwiche BPA-PG-5  
Scott Bettin, Tony Norris BPA-Operations Planning-PGPO  
Stan Speaks, Keith Hatch BIA, Northwest Regional Office

FROM: B. Paul Lumley, *Executive Director*

DATE: June 12, 2013

SUBJECT: **Operation of the Lower Columbia Pools for the Summer 2013 Treaty Fishery**

The Columbia River Inter-Tribal Fish Commission, on behalf of its members, the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakama Nation, requests the following reservoir operations in "Zone 6" (Bonneville to McNary dams) during the summer 2013 Treaty fishery. This effort supports the 2013 ceremonial, subsistence, and commercial Treaty fishery times as established by the tribes and the Columbia River Compact.

SPECIFICATIONS: Implement the following pool operations as a hard system constraint, as follows:

**June 17, 2013, 6 am, Monday, through 6 pm, June 21, 2013, Friday.**

**June 24, 2013, 6 am, Monday, through 6 pm, June 27, 2013, Thursday.**

**Bonneville: Operate the pool within a 1.5 foot band during the treaty fishing period.**

**The Dalles (Celilo): Operate the pool within a 1.5 foot band during the treaty fishing period**

**John Day: Operate the pool within a 1.5 foot band during the treaty fishing period.**

JUSTIFICATION:

The 2013 summer treaty fishing season is of critical importance to CRITFC's member tribes. The escapement (Columbia at Bonneville Dam) of an estimated of **73,500** (above average) adult summer Upper Columbia Chinook and **180,350** sockeye (above average) will create harvest opportunities for tribal fishers who will exercise their treaty rights by participating in this harvest using platform and gillnet fishing methods. This harvest will provide for the cultural, religious, and economic needs of the treaty tribes.

CRITFC will sponsor net flights each week to count the nets in each Zone 6 pool. The survey data will be shared with COE-RCC staff by early afternoon of the flight day.

Achieving good river conditions through managed river operations during the treaty fishery have been the basis of past litigation that have been supported by federal courts and are consistent with the trust and fiduciary responsibilities that the federal operators have with respect to CRITFC's member tribes. Good river conditions during the treaty fishery are also consistent with the spirit of the 10-year Memorandum of Agreements signed by tribal and Corps, BPA, and BOR officials.

In past meetings with Corps officials, tribal fishers have explained that a pool fluctuation of more than 1.5 foot disrupts tribal fishery operations. Specific problems include: (1) increased local currents that sweep debris into fishing nets, (2) rapid 1-2 hour drops in water level will lead to entanglement of nets or change local currents that affect fishing success, (3) boat access problems, and (4) nets torn from their anchors if pools are raised after nets are set. Nets and gear are costly to replace and may become "ghost nets" that continue to catch fish and may negatively affect fish populations outside of the treaty fishing period.

Any delays or disruptions to tribal fishing operations caused by the excessive pool fluctuations in Zone 6 can negatively impact tribal incomes, food resources and cultural practices. Much of the tribal fishers' annual income and food is generated during the brief treaty fishing season. The fishers have expressed to Corps officials that the loss of fishing opportunity during the extremely limited treaty fishery period cannot be replaced.

If this SOR cannot be accommodated, CRITFC requests a verbal response with an explanation from the federal operators by COB, Friday June 14, 2013. Thank you for considering this request. Please contact Kyle Dittmer or Stuart Ellis should you have any questions at (503) 238-0667.

cc: Tribal staffs and attorneys

**DRAFT SPILL PRIORITY LIST Effective June 19 to August 31**

If necessary to spill above FOP spill rates, the Action Agencies will incrementally increase spill at projects in the following priority order. This order is intended to manage TDG levels on a system-wide basis while prioritizing extra spill in a manner that provides the most benefit to fish passage. *The order of the eleven projects may be adaptively managed in-season based on feedback and recommendations from TMT.*

Level	Priority Order	Project	TDG %	Spill Cap Estimate (kcfs)
<b>LEVEL 1 – up to State TDG Standards <sup>1</sup></b>	01	LWG	120/115%	40
	02	IHR	120/115%	92 night / 75 day
	03	MCN	120/115%	190
	04	JDA	120/115%	142
	05	TDA	120/115%	115
	06	BON	120/115%	120
	07	LMN	120/115%	24 (Bulk)
	08	LGS	120/115%	38
	09	CHJ	110%	21
	10	GCL	110%	0 (OT) or 30 (DG) <sup>2</sup>
	11	DWR	110%	30% of total river flow
<b>LEVEL 2 – removes downstream forebay restriction</b>	12	LWG	120%	45
	13	IHR	120%	92 night / 75 day
	14	MCN	120%	209
	15	JDA	120%	146
	16	TDA	120%	135
	17	BON	120%	120
	18	LMN	120%	44
	19	LGS	120%	55
	21	CHJ	120% <sup>3</sup>	60
	<b>LEVEL 3</b>	22	LWG	122%
23		IHR	122%	92 night / 85 day
24		MCN	122%	185
25		JDA	122%	177
26		TDA	122%	160
27		BON	122%	140
28		LMN	122%	60
29		LGS	122%	59
30		CHJ	120%	115
31		GCL	115%	5 (OT) or 40 (DG)
<b>LEVEL 4</b>	32	LWG	125%	63
	33	IHR	125%	110
	34	MCN	125%	230
	35	JDA	125%	190
	36	TDA	125%	269
	37	BON	125%	215

Level	Priority Order	Project	TDG %	Spill Cap Estimate (kcfs)
	38	LMN	125%	80
	39	LGS	125%	70
	40	CHJ	122%	160
	41	GCL	120%	15 (OT) or 50 (DG)
LEVEL 5	42	LWG	127%	85
	43	IHR	127%	124
	44	MCN	127%	280
	45	JDA	127%	206
	46	TDA	127%	294
	47	BON	127%	234
	48	LMN	127%	120
	49	LGS	127%	95
	50	CHJ	125%	190
	51	GCL	122%	20 (OT) or 60 (DG)
LEVEL 6	52	LWG	130%	90
	53	IHR	130%	145
	54	MCN	130%	321
	55	JDA	130%	250
	56	TDA	130%	360
	57	BON	130%	250
	58	LMN	130%	180
	59	LGS	130%	125
	60	CHJ	127%	250
	61	GCL	125%	25 (OT) or 80 (DG)
LEVEL 7	62	LWG	135%	200
	63	IHR	135%	240
	64	MCN	135%	375
	65	JDA	135%	300
	66	TDA	135%	400
	67	BON	135%	300
	68	LMN	135%	250
	69	LGS	135%	177
	70	CHJ	130%	280
	71	GCL	130%	42 (OT) or 120 (DG)

1. During Fish Passage Season (Apr 1–Aug 31), state TDG standards are  $\leq 120\%$  in the tailrace or  $\leq 115\%$  at the next downstream forebay (whichever is more restrictive) for the eight Lower Snake and Lower Columbia fish passage projects, and  $\leq 110\%$  at all other projects.

2. Spill at GCL is either through outlet tubes (OT) or drum gates (DG), depending on reservoir elevation. Spill through OT produces more TDG. Spill transitions to drum gates at forebay elevation of 1267-1270 feet.

3. CHJ Level 2 spill shaped to 115% in the Wells Dam forebay, up to 120% in the CHJ tailrace, depending on anticipated duration.

## 2012-2013 Hanford Reach Fall Chinook Protection Program (HRFCPP)

### HRFCPP Lifestages

	Begin (000 hrs)	End (2400 hrs)
Spawning Period	10/24/2012	11/18/2012
Pre-Hatch Period	10/24/2012	1/22/2013
Post-Hatch Period	12/2/2012	4/25/2013
Emergence Period	3/2/2013	4/26/2013
Rearing Period	3/2/2013	6/2/2013

### ATUs (celcius)

	Initiation of spawning	through 06/02/13
<36 kcfs elevation	10/24/2012	1758.0
36-50 kcfs elevation	10/24/2012	1758.0
>50 kcfs elevation	10/31/2012	1660.3
End of spawning	11/18/2012	1411.0
Temperature on 06/03/13		13.3
Critical Elevation (kcfs)	65	

### HRFCPP Constraint dates

HRFCPP Section	Begin (000 hrs)	End (2400 hrs)	Current constraint as of 06/03/13
C.1(c)	10/24/2012	11/18/2012	
C.2	10/24/2012	12/1/2012	
C.3(a)	12/2/2012	3/1/2013	
C.3(b)	12/12/2012	3/20/2013	
C.4(a)	3/2/2013	4/26/2013	
C.4(b)	3/21/2013	4/26/2013	
C.5(b)(1-5)	3/2/2013	6/2/2013	
C.5(b)(6)	3/30/2013	4/21/2013	

### Current date

6/19/2013

[Link to TU data](#)

### Data through:

6/3/2013

[Link to discharge data](#)

**Protections completed for the season on 06/02/13**

**Exceedances: 2**

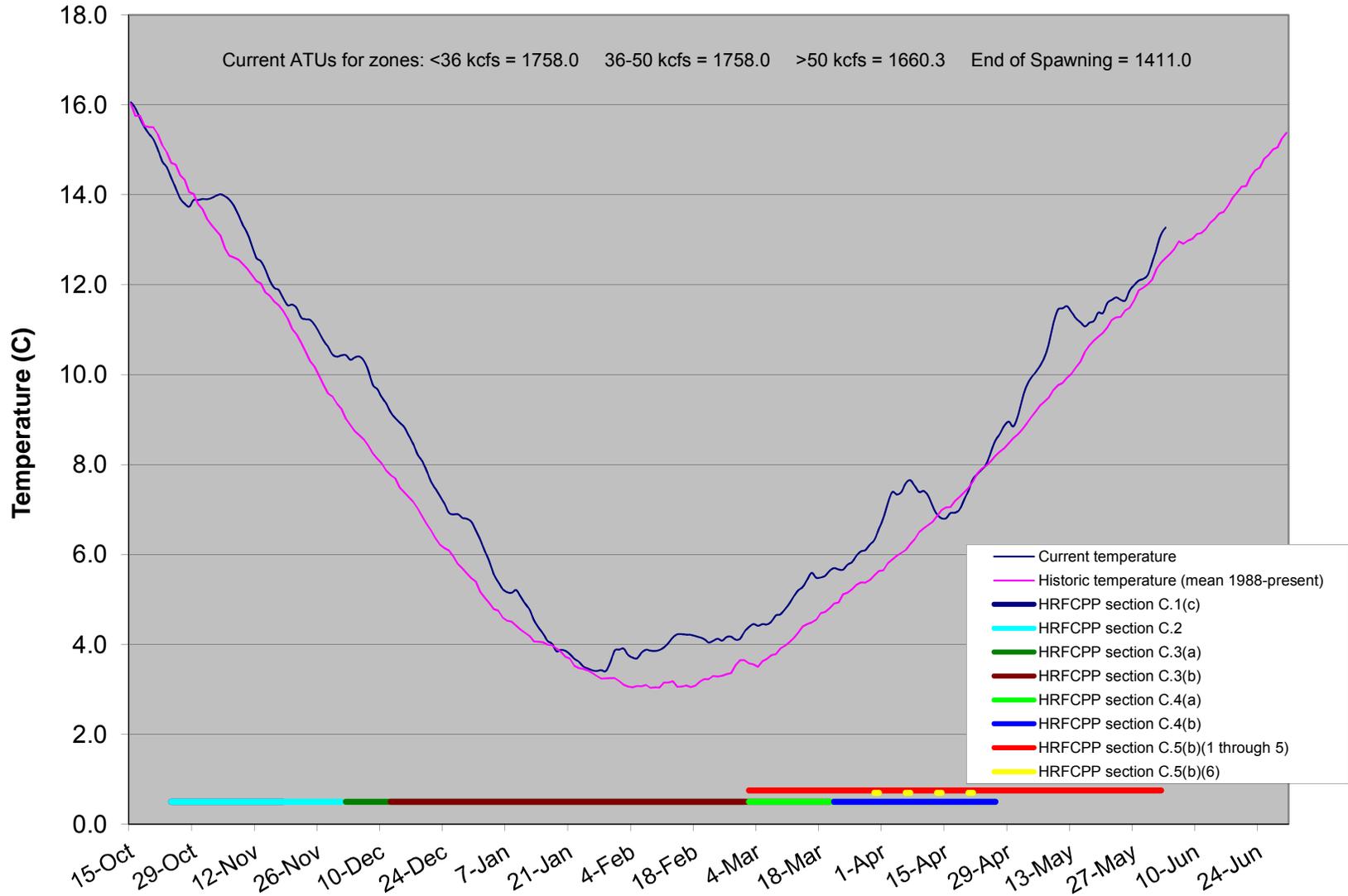
Cell are highlighted in yellow when ATU criteria are met.

Cell are highlighted in red when these constraints are currently in effect

Dates with red text are predicted based on current conditions and data from 1988 to present

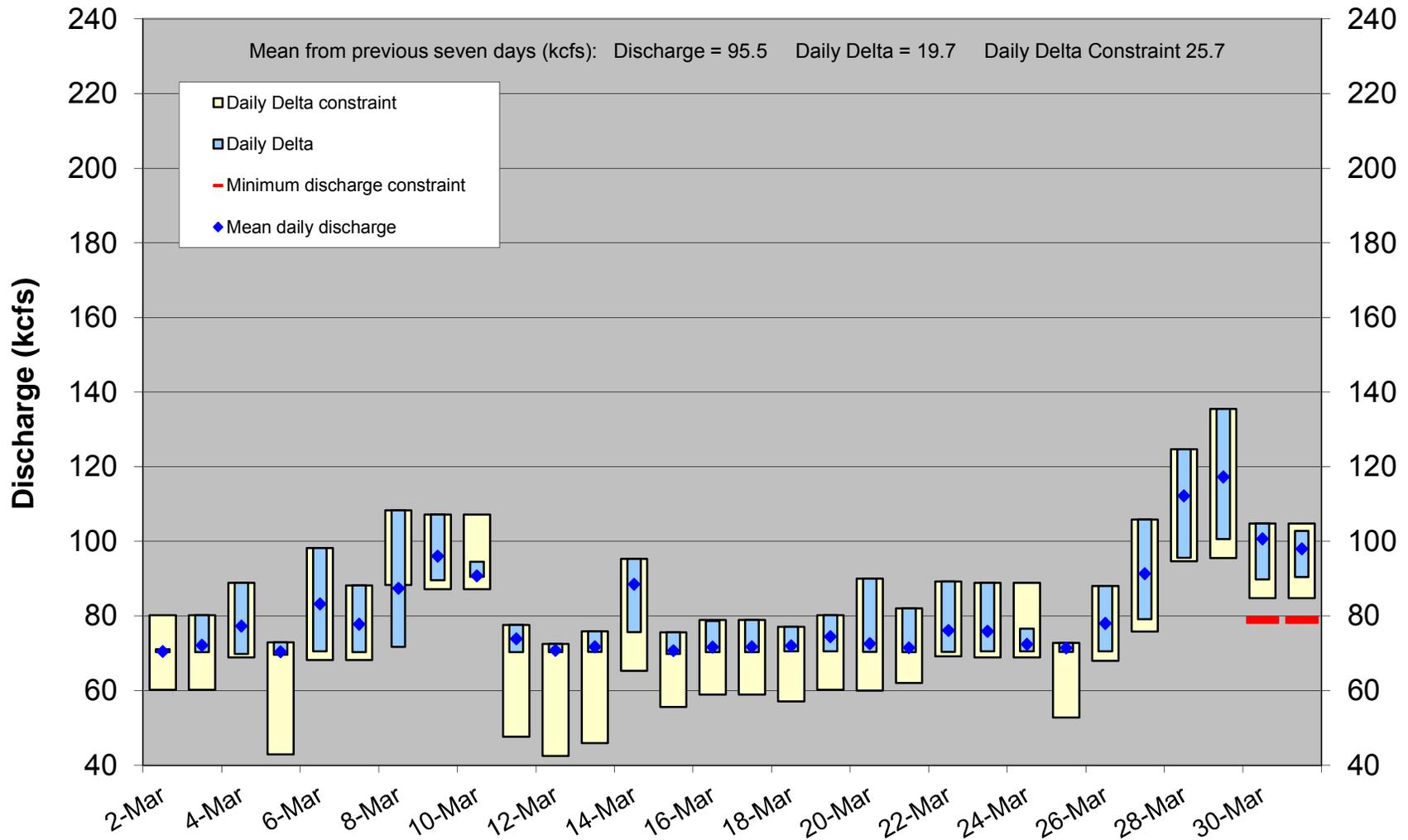
<http://grantpud2.org/data/water/fixd/2013/summary/tdg-monthly-summary-2013.xls>

## 2012-2013 PRD Tailrace Temperatures and HRF CPP constraints



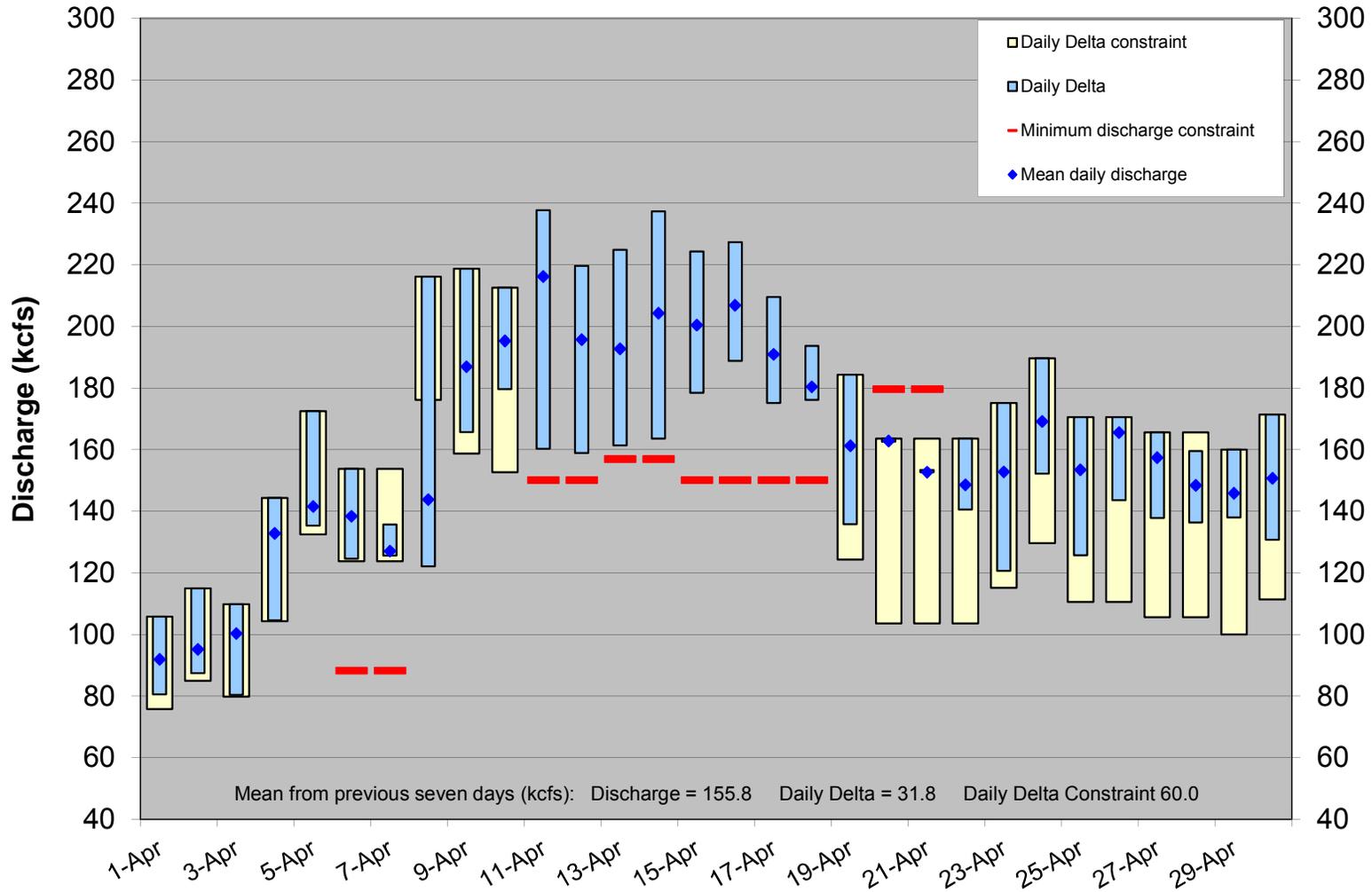
# Priest Rapids Dam Operations 2013

Number of exceedances: 1



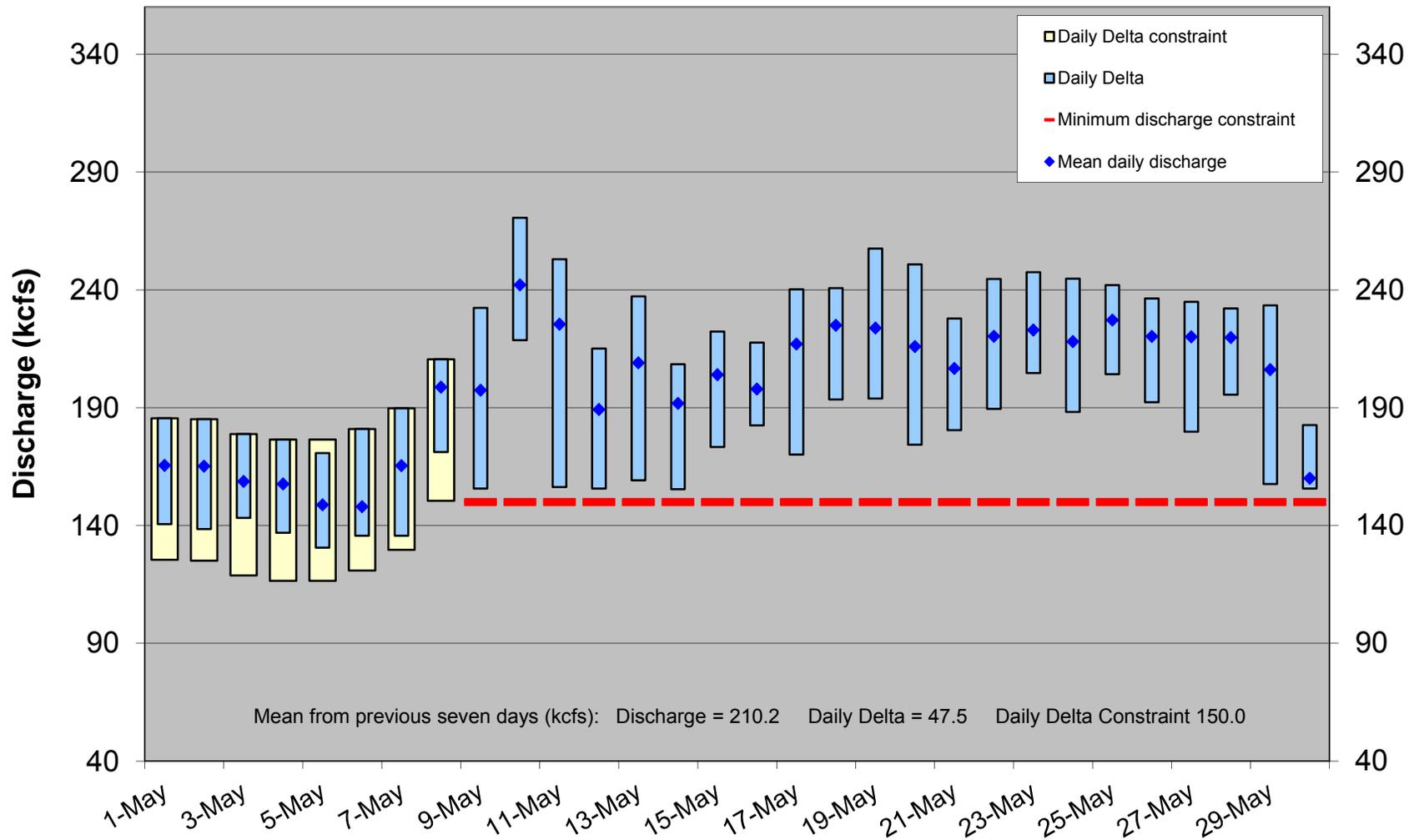
# Priest Rapids Dam Operations 2013

Number of exceedances: 1



# Priest Rapids Dam Operations 2013

Number of exceedances: 0



# Priest Rapids Dam Operations 2013

Number of exceedances: 0

